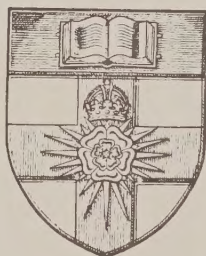


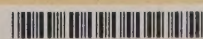
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ACCOUNTS AND PAPERS:

FORTY-FOUR VOLUMES.

— (25.) —

RAILWAYS—(*continued*);
TRAMWAYS.

Session

11 *February* 1890 — 18 *August* 1890.

VOL. LXV.

1890.



GENERAL REPORT

TO THE BOARD OF TRADE

UPON THE

A C C I D E N T S

WHICH HAVE OCCURRED ON

THE

RAILWAYS OF THE UNITED KINGDOM

During the Year 1889.

Presented to both Houses of Parliament by Command of Her Majesty.



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1890.

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REPORT, &c.

TO THE SECRETARY, BOARD OF TRADE.

SIR,

I HAVE the honour to present to the Board of Trade a General Report on the accidents and collisions which have occurred in the working of the railways of the United Kingdom during the year 1889, founded principally on returns made by the railway companies under the Act 34 & 35 Vict. c. 78. s. 6, and on reports upon certain accidents and collisions, made after inquiry by Officers of this Department.

Total killed and injured from all Causes in the working of Railways.

The total number of persons returned to the Board of Trade as having been killed in the working of the railways during the year was 1,076, and the number of injured 4,836.

Of the above numbers,—183 persons killed and 1,829 persons injured were passengers; but of these only 88 were killed and 1,016 injured in consequence of accidents to or collisions between trains; the deaths of the remaining 95 passengers and the injuries to 813 were due to a variety of other causes, and especially to want of caution on the part of the individuals themselves.

Of the remainder, 435 killed and 2,769 injured were officers or servants of the railway companies, or of contractors.

Of suicides there were 84; of trespassers, 267 were killed and 122 injured; of persons passing over the railway at level-crossings, 72 were killed and 42 injured: and from miscellaneous causes, 35 persons were killed and 74 injured.

In addition to the above, the companies have returned 63 persons killed and 6,145 injured from accidents on their premises not connected with the movement of railway vehicles.

Proportion of Passengers killed and injured from all Causes in the working of Railways.

The total number of passenger-journeys, exclusive of journeys by season-ticket holders, was 775,183,073 for the year 1889, or 32,683,909 more than in the previous year. Calculated on these figures, the proportions of passengers killed and injured during the year 1889, *from all causes*, were 1 in 4,236,000 killed, and 1 in 423,280 injured.

In 1888, the proportions were 1 in 6,942,336 killed, and 1 in 527,577 injured.

Proportion of Passengers killed and injured from Causes beyond their own control.

The following statement shows the proportion of passengers returned as killed and injured from causes beyond their own control, in passenger-journeys, for the years 1874 to 1889:—

Year.	Number of Passengers Killed and Injured from causes beyond their own control, from Accidents to Trains.		Number of Passenger Journeys (exclusive of Journeys by Season-ticket Holders).	Proportion returned as Killed and Injured (from causes beyond their own control) to number carried.	
	Killed.	Injured.		Killed.	Injured.
1874	86	1,613	477,840,411	1 in 5,556,284	1 in 296,243
1875	17	1,212	506,975,234	1 in 29,882,073	1 in 418,296
1876	38	1,279	538,287,295	1 in 14,165,455	1 in 420,865
1877	11	664	551,593,654	1 in 50,144,876	1 in 830,713
1878	24	1,173	565,024,455	1 in 23,542,685	1 in 481,692
1879	75*	602	562,732,890	1 in 7,503,105	1 in 934,772
1880	29	904	603,885,025	1 in 20,823,586	1 in 668,013
1881	23	987	622,160,000	1 in 27,050,435	1 in 630,354
1882	18	803	654,838,295	1 in 36,379,905	1 in 815,489
1883	11	662	683,718,137	1 in 62,156,194	1 in 1,032,806
1884	31	864	694,991,860	1 in 22,419,092	1 in 804,888
1885	6	436	697,213,031	1 in 116,202,171	1 in 1,599,112
1886	8	615	725,584,390	1 in 90,698,049	1 in 1,179,812
1887	25	538	733,670,000	1 in 29,346,800	1 in 1,363,699
1888	11	594	742,499,164	1 in 67,530,000	1 in 1,250,555
1889	88†	1,016‡	775,183,073	1 in 8,808,875	1 in 762,975†

* Including 73 persons lost in the Tay Bridge disaster in the year 1879.

† If the journeys of season-ticket holders, which have been estimated for the past year at 140,000,000, are included, the proportions would be nearly 1 killed in 10 millions, and 1 injured in 900,000.

‡ Including 80 killed and 262 injured in collision near Armagh.

From this table it will be observed that the number of passengers returned as killed *from causes beyond their own control* which was 11 in 1888, was 88 in 1889. In 1888 the deaths of the 11 passengers were due to four accidents. The 88 killed in 1889 were also due to four accidents. The number of those injured has increased from 594 in 1888 to 1,016 in 1889.

INQUIRIES INTO ACCIDENTS.

The number of inquiries into train-accidents directed by the Board of Trade shows an increase as compared with the four preceding years.

The train-accidents investigated in 1889 were 69 as compared with 61 in 1888, 58 in 1887, 62 in 1886, 60 in 1885, 105 in 1884, 94 in 1883, 118 in 1882, 111 in 1881, 118 in 1880, 100 in 1879, 108 in 1878, 146 in 1877, 149 in 1876, and 161 in 1875.

Three accidents, each of a miscellaneous character, but not train-accidents, have also formed the subject of inquiry.

A detailed account of the causes which led to the train-accidents of the year, and the measures which were recommended for the prevention of the recurrence of similar events, will be found at pages 6 to 20 of this report. Meanwhile the following summary may be given here.

Three train-accidents were attended with fatal accidents to passengers arising from causes beyond their own control.

By far the most serious of these accidents occurred to an excursion train consisting of school children, teachers, and friends, on an incline on the Great Northern and Western Railway of Ireland, and caused the death of 80 passengers, and injuries to 262 passengers and 2 servants.

A second, an accident to an excursion train, appeared to have been caused by the breaking of the leading axle of the engine, near Penistone, on the Manchester, Sheffield, and Lincolnshire Railway. One passenger was killed, 20 passengers were seriously injured, and complaints were received of injury from some 50 others.

A third was due to a collision between a passenger train and two engines and a break van standing on the line, at Longsight, near Manchester, on the London and North-Western Railway. One passenger was killed on the spot, 6 others died from the effect of the injuries, one of whom was a servant travelling as a passenger, and 37 passengers, and 1 servant were injured, 7 of the passengers seriously.

Of the remaining accidents and collisions the following caused injuries to passengers:—

An express train at Ryhope on the North-Eastern Railway left the rails, and the engine and vehicles were thrown on their sides. Complaints of injury were received from no less than 101 passengers, in 10 cases the injuries being of a serious character.

A coal train standing at the Cheetham Hill Junction signals, was run into at the rear by a down passenger train, the rear van of the coal train being thrown in front of the up fast line, and subsequently run into by an up passenger train. The fireman of the down train was killed, 2 passengers had their ribs broken, and 60 others complained of injury; 5 servants were injured.

A passenger train left the rails when running round a curve at Haughhead Junction on the Caledonian Railway. Complaints of injury were received from 39 passengers.

As a passenger train was passing Stoke Newington Station on the Great Eastern Railway, the engine and two first carriages left the rails. Complaints of injury were received from 32 passengers.

A passenger train from Keith, when entering Huntly Station on the Great North of Scotland Railway, was turned by mistake on to the down loop line and came into collision with a passenger train from Aberdeen. 20 passengers and 2 servants were returned as injured.

Of the remaining accidents or collisions to trains inquired into—

Seven occurred in which from 11 to 19 passengers were injured.

Ten in which 6 to 10 passengers were injured.

Twenty-three, in which from 2 to 5 passengers were injured.

Seven, in each of which 1 passenger only was injured.

Fourteen, in which there were no injuries to the passengers in the trains.

The inquiries into train-accidents classified under certain heads for the past year and for each of the preceding twelve years are given in the following Table for the purpose of comparison.

Class of Accident.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.
A. From engines or vehicles meeting with obstructions, or leaving the rails in consequence of obstructions, or from defects in connexion with the permanent way or works - - -	21	12	8	22	24	14	12	21	7	7	11	10	11
B. From boiler explosions, failures of axles, wheels, or tyres, or from other defects in the rolling stock - - -	11	19	9	9	6	12	7	9	6	8	1	7	6
C. From trains entering stations at too great speed - - -	5	2	8	7	5	8	12	11	4	4	10	7	12
D. From collisions between engines and trains following one another on the same line of rails, excepting at junctions, stations, or sidings - - -	5	3	8	8	9	6	3	3	2	—	3	2	1
E. From collisions at junctions - - -	15	9	10	14	13	8	8	10	8	10	2	1	4
F. From collisions within fixed signals at stations or sidings - - -	44	38	43	49	36	48	44	40	24	25	22	16	25
G. From collisions between engines or trains meeting in opposite directions - - -	3	3	1	—	3	4	—	—	—	1	6	8	2
H. From collisions at level-crossings of two railways - - -	—	—	—	—	—	—	—	—	—	—	—	—	—
I. From engines or trains being wrongly run or turned into sidings, or otherwise through facing points - - -	27	11	9	8	9	12	6	11	7	4	3	4	4
J. On inclines - - -	13	11	3	1	6	—	2	—	2	3	—	1	4
K. From trains on fire - - -	—	—	—	—	—	1	—	—	—	—	—	—	—
L. Miscellaneous - - -	2	—	1	—	—	5	—	—	—	—	—	2	—
Total - - -	146	108	100	118	111	118	94	105	60	62	58	61	69

The number of passengers and servants of companies killed and injured, in the train-accidents inquired into during the year 1889, classified in the same way, are given in the following Table :—

Class of Accident.	Number of Accidents.	Passengers and others		Servants of the Company	
		Killed.	Injured.	Killed.	Injured.
A. From engines or vehicles meeting with obstructions, or leaving the rails, in consequence of obstructions, or from defects in connexion with the permanent way or works - - -	11	—	77	—	—
B. From boiler explosions, failures of axles, wheels, or tyres, or from other defects in the rolling stock - - -	6	1	72	—	1
C. From trains entering stations at too great speed - - -	12	—	81	—	4
D. From collisions between engines and trains following one another on the same line of rails, excepting at junctions, stations, or sidings - - -	1	—	13	—	1
E. From collisions at junctions - - -	4	—	88	1	6
F. From collisions within fixed signals at stations or sidings - - -	25	7	143	1	20
G. From collisions between engines or trains meeting in opposite directions - - -	2	—	24	—	—
H. From collisions at level-crossings of two railways - - -	—	—	—	—	—
I. From engines or trains being wrongly run or turned into sidings, or otherwise through facing points - - -	4	—	5	—	—
J. On inclines - - -	4	80	376	—	7
K. Train on fire - - -	—	—	—	—	—
Total - - -	69	88	879	2	39

TRAIN-ACCIDENTS.

A.—*Accidents from Engines and Vehicles meeting with Obstructions or leaving the Rails in consequence of obstructions or from Defects in connexion with the Permanent Way or Works.*

Eleven accidents in this class, resulting in injury to 77 passengers, were investigated.

One of the accidents was due to the train passing round a curve at too high speed; two were caused by the train running at too high speed during repairs to the permanent way; one by the line not being properly repaired after derangement by a previous accident; one by the road not being properly packed under the longitudinal sleepers; one was due to the permanent way requiring relaying; one partly due to too high a speed in a curve on a light railway; one to the check rail in a curve being too short; and one to a train travelling at too high a speed on a curve on which it was impossible to give the usual super-elevation.

In three cases the automatic continuous brake did good service in stopping the train.

CALEDONIAN:

January 21st.—As a passenger train from Glasgow for Lesmahagow was running round a curve at Haugh-head junction the engine, the five vehicles next it, and the leading wheels of the sixth vehicle left the rails.

Complaints of injury were received from 39 passengers, but of these it was stated that only 21 were serious cases.

The engine ran about 58 yards after leaving the rails, and was then stopped by the earthen buffer-bank at the dead end of a siding. There was not time for the brakes to be brought fully into action before the engine was stopped at the buffer-bank.

It appeared that the accident was caused by the outward pressure of the right wheels of the engine against the check-rail opposite the V crossing breaking the check-rail about four feet before the V point was reached, and thus allowing the left wheels of the engine to take the wrong or left side of the V point. The outward pressure, due to too high a speed of a heavy engine round a sharp curve, accompanied also by oscillation, produced a strain on the check-rail which it was unable to withstand.

The driver of the train had been on duty about eight hours out of a day's work of 12 hours when the accident occurred.

At sharp junction curves where it is impossible, owing to the crossings, to give a proper amount of super-elevation to the outer rail, it is most important that a very moderate speed should be observed. The speed was probably 20 to 25 miles an hour, whereas 10 miles an hour should be the maximum speed allowed round so sharp a curve.

DUNDEE AND ARBROATH JOINT:

February 12th.—As a North British passenger train was leaving the main line at St. Vigean's junction, the engine left the rails, and came to a stand in about 30 yards, when it was found that the whole of the wheels of the engine and the two leading vehicles, and one pair of wheels of the third carriage, were off the rails.

No person was injured.

There had been a violent collision between two goods trains at this junction on the previous night, and the road had been under repair during the night. This accident was attributed to the line not having been properly restored after the collision, and although three trains had already passed safely over the spot, it must have been in such a state that they should only have been allowed to pass at caution pending the final completion of the repairs. The speed was considered to have been about 10 miles an hour.

The junction curve where the engine left the rails had only a radius of 8½ chains, instead of 10 chains as it was returned when the line was opened, and although proper check-rails were provided, such a curve is too sharp for a running junction, especially where the speed is not limited by any regulation.

GREAT EASTERN:

January 28th.—As a passenger train was passing Stoke Newington station all the wheels of the tank engine and of the first carriage, and the leading wheels of the second carriage, left the rails.

Complaints of injury were received from 32 passengers.

The accident must have occurred from one of two causes; namely, either the right leading wheel of the engine must have mounted the right rail, across the top of which a faint mark was visible, and then made a mark on a key and the head of a fish-bolt close to it, the rail 17 feet from this mark having then been broken by the rail being nipped between the leading and driving wheels of the engine; or the rail must have been broken by the engine itself, or by the passage of a previous train, the marks prior to the fracture having been caused by one of the wheels of the vehicles next the engine, this wheel having been thrown off the rails by the jerk which the engine received at the broken rail. There was nothing wrong with the engine or with the general condition of the permanent way at the spot to account for the accident so far as could be ascertained from the evidence and from a careful examination of the engine and the road, nor was there any evidence that the speed was excessive.

The driver, who had felt the engine make a kind of jump close to the first broken rail, shut off the steam and afterwards applied the Westinghouse brake with full force, after which the engine ran about 100 yards. The fact of no approach to telescopic action having taken place between the carriages when the head of the train was suddenly checked, may well be attributed to the action of the continuous brake.

The permanent-way on this portion of the line was to be shortly re-laid. It was the opinion of the Inspecting Officer that no unnecessary time should be lost in doing this, as the present rails had lost from 8 to 10 lbs. per yard of their original weight of 80 lbs. to the yard. The Inspector was also of opinion that the weight on the wheels of tank-engines intended to run in either direction should be more equally distributed than was the case with this particular engine.

GREAT WESTERN:

April 6th.—The driving wheels of the engine of a London and South-Western Company's passenger train from Devonport for London left the rails while passing over the crossings at Devonport junction.

No person was injured.

The accident was caused by the check-rails opposite the crossings not being sufficiently strong to guide the driving wheels of the engine safely through the crossings. After the accident, six out of 12 plates of the off-side driving-spring were found to be broken. If these plates were broken previous to the accident, they would allow of the depression and bearing of the engine to the right or off side, put improper weights on the several wheels, and contribute to the accident.

May 8th.—As a passenger train was running between Cranmore and Witham stations several of the vehicles left the rails about a mile and a half south of Witham.

No persons were injured.

The accident appeared to have been caused by the road not having been properly packed under the longitudinal sleepers next to those that had been renewed, but the Inspecting Officer was of opinion that it would scarcely have happened if the engine had been tightly coupled up to the train with the engine coupling instead of with the carriage coupling.

Fay's brake, which was upon the train, did good service in stopping it.

May 13th.—The two leading wheels of the engine of a passenger train from Par to New Quay ran off the rails in a curve at St. Dennis junction.

No persons were injured.

The accident was caused by a stiff engine starting on a new and very strong permanent-way, of which the rail at the place where the engine mounted was said to have been very rusty. The ballasting was incomplete in that it had not been filled in, and there was no check-rail on this part of the curve. The check-rail approaching the junction was kept too short, but it has since been carried further on so as to cover the first junction crossing.

December 18th.—The mail train, which was due to leave London at 9 p.m., for Penzance ran off the rails while passing over the Wiveliscombe viaduct, between Saltash and St. Germans stations, on the Cornwall line. When the train was stopped all the coaches were off the rails.

This accident, which fortunately was not attended by any injuries to the passengers in the train or to the Company's servants who were in charge of it, was caused by there being no super-elevation on the outer rail of the first curve at the place where the near-side leading wheel of the engine mounted.

The gangers had been working at Wiveliscombe viaduct repairing the floor, on the day before the accident and for several previous days. The viaduct ganger in replacing the railway, after repairing the floor, did not appear to have fixed the outer rail of the curve in a permanent manner with the proper super-elevation. It was recommended that a short piece of straight line should be introduced between the reverse curves, and that the super-elevation of the outer rails of each curve should be more carefully attended to.

LISTOWELL AND BALLYBUNION:

September 29th.—As a passenger train from Ballybunion for Listowell was approaching Galey bridge, the whole of the train (which consisted of engine and tender and seven vehicles), with the exception of the engine, tender, and last vehicle, left the line; the engine and tender broke away from the first vehicle, and stopped in a few yards by the automatic application of the Westinghouse brake, with which the engine, tender, and three vehicles were fitted. There was an interval of about four yards between the tender and the first of the seven vehicles, which all remained coupled together, but all except the last one more or less tilted over to the left.

The train was full of passengers, but none, it is stated, have complained of being injured.

The damage to the train consisted in two bogie pivots of the vehicle next the engine, and in two side wheels of two other carriages, being broken.

In the permanent-way about 30 trestles were displaced, and 20 of these had their left legs bent inwards.

The accident appears to have been due to the absence of some of the bolts and nuts which should have secured the rails to the tops of the trestles, the passage of the engine and tender round the reverse curves of six chains radius (near the junction of which the rail seems first to have been displaced) forcing the rail from the heads of the trestles, and thus preventing the carriage next the tender and the five following vehicles from remaining on the line. The automatic action of the Westinghouse brake was most useful in preventing the rear vehicles from running in on the front ones.

LONDON AND SOUTH-WESTERN:

December 24th.—As the 3.54 p.m. up passenger train from Ilfracombe, fitted with the automatic vacuum-brake, was running round a curve about two miles south of Morthoe station, the engine left the rails, followed by the whole of the vehicles in the train. The engine came to a stand in 136 yards. One passenger complained of injury.

From the evidence given, and from the marks which were left upon the permanent way, it seems clear that the left leading wheel of the engine mounted the outer rail of the sharp curve upon which it was then running, ran along it for about 17 feet, and then dropped off on the outside.

If the trailing wheels had not fortunately kept on the rails, it is more than probable that the engine would have fallen over the low embankment across which it ran before coming to a stand, and in this case the consequences to this train might have been serious. The continuous brake was promptly applied and acted well, doing very good service.

The permanent-way was in good order, except that it was rather too tight to gauge for a line upon a sharp curve, and there was a super elevation of the outer rail to the extent of $4\frac{1}{2}$ inches. The curve was regular, and there were no low places in the rails.

The engine was in good running order, and the only spring which was found defective had one partially broken plate, the fracture being clearly due to the accident.

The Inspecting Officer was of opinion that there was some small stone upon the line which was crushed by the engine wheel, but that, as there were no traces of any pieces of this stone at the side of the rails, it must have been so small a one that it is difficult to believe that the obstruction could have been sufficient to cause the engine wheel to mount the rail, unless the speed had been higher than it should have been.

The tightness of the gauge, and the build of the engine, which had a rigid wheel base of 13 feet 10 inches, would account in some degree for the mounting of the rail upon the outer wheel being lifted to a very small extent.

The Inspecting Officer further stated that it was not right that gangs of contractors' men should be put to work upon a line open for traffic, without careful and constant supervision by some servant of the Railway Company, and that the piling up of a heap of ballast so close to a rail that it would be perfectly easy for a piece of stone to be rolled down upon the rail by the shaking of a passing train was most objectionable, and should under no circumstances be allowed.

The curves and gradients upon the line, which was made in the first instance as a light line, are such that any high speed would be dangerous, and point to the necessity of steps being taken to secure that the booked times should be adhered to.

LONDON, CHATHAM, AND DOVER:

July 1st.—As a passenger train from Greenwich for Holborn was passing through a cross-over road between the middle line and the up line close to the end of the Nunhead platform, at which the train had stopped, the eleventh and twelfth vehicles from the engine left the rails; the eleventh vehicle breaking away from the one in front of it, and stopping about 80 yards from the first mark of a wheel leaving the rails.

One passenger (a boy about 14 years old) broke his arm in getting out of the eleventh vehicle after it had stopped, and three other passengers complained of having been shaken.

In the absence of any other sufficient reason, the accident was attributed to too high a speed having been attained by the rear of the train when it entered the curve, which had a radius of 10 chains, where from the nature of the case, it was impossible to give the usual super-elevation. The right leading wheel of the eleventh vehicle mounted the rail on the outside of the curve. The six vehicles in front of the eleventh being short-buffered, and the eleventh and three vehicles behind it long-buffered, may have introduced some inequality in the running of the 10th and 11th vehicles, and helped to cause the front wheel of the eleventh vehicle to mount the outer rail of the curve.

Neither the driver nor the fireman nor either of the two front guards discovered that they had left four-fourteenths of their train behind them till they reached Peckham Rye.

It was recommended that the attention of the drivers should be drawn to the necessity of observing a slow rate of speed until their trains have cleared the cross-over road; and it was suggested whether it might not be possible to give rather more super-elevation to the outer-rail of the 10 chain curve, and to make the gauge somewhat easier.

SOUTH-EASTERN:

August 30th.—As an up slow passenger train from Hastings for London was running between Battle and Robertsbridge stations, five vehicles at the rear of the train left the rails near an over-bridge about $2\frac{1}{2}$ miles on the London side of Battle station, the first of these five vehicles coming into collision with one of the piers of the bridge.

One passenger complained of being injured.

It seemed probable that an empty horse-box at the tail of the train consisting of an engine, tender, and seven vehicles, was the first to leave the rails, and dragged off after it the four vehicles in front. This horse-box had four wheels, with a wheel base of 7 feet, and weighed, empty, about $4\frac{1}{2}$ tons.

The up line at and near the scene of the accident was under repair at the time the accident occurred. New sleepers had been put in between a spot about two rails' length on the Battle side of the first mark and the over-bridge where

the train stopped, the work having been completed, so far as the new sleepers were concerned, two days before the accident, but the ballast had been only lightly thrown back to the level of the tops of the new sleepers. On the Battle side of the new sleepers the ballast had been stripped for a considerable distance as far as the tops of the sleepers, preparatory to new ones being put in where necessary. Notice had been given by circular that the up line between Battle and Robertsbridge was under repair.

Notwithstanding the warning which was given by the green flag, and the notice in the circular, the train appeared to have been running over an imperfectly ballasted portion of the line at a high rate of speed (the driver and fireman

stated it to have been 25 miles an hour), having just completed the descent of falling gradients principally of 1 in 100 extending from Battle, with a left-handed curve of a mile radius.

The accident must, therefore, it was thought, be attributed to running a light vehicle with a short wheel base at the tail of a train proceeding at too high a rate of speed along a part of the line under repair. It is no doubt convenient to attach horse-boxes to the tail of passenger trains, but it was the opinion of the Inspecting Officer that it would be far safer to place light vehicles of this description in front of the rear brake-van rather than behind it.

B.—Accidents from Boiler Explosions, Failures of Axles, Wheels, or Tyres, or from other Defects in Rolling Stock.

Under this head six accidents were investigated, resulting in the death of one passenger and in injury to seventy-two passengers and one servant of the company.

One of the accidents appeared to have been due in some measure to an inequality in the height of the buffers of a horse-box; one to the running of an engine with radial axle-box wheels in front; one to the breaking of the leading axle of the engine of an excursion train owing to flaw in the metal; one to the breaking of the top-plate of a spring of the engine of a passenger train; one to the breaking of the crank pin of one of the driving wheels of an engine; and one to the unsteady running of a horse-box which was not tightly coupled up.

In one case the action of the automatic continuous brake did good service in stopping the train.

CALEDONIAN:

March 9th.—As an up fast passenger train from Aberdeen was approaching Muchalls station where it was not timed to stop, a pair of wheels belonging to one of two empty horse-boxes, which were next the engine, left the rails, and ran in that position for over 1,000 yards until the train reached Muchalls station, when a second pair of the horse-box wheels left the rails at a cross-over road, followed by the remainder of the train.

No passengers or servants of the company were injured. The passenger train was running at a speed of probably 50 miles an hour round an easy curve of 40 chains radius on a falling gradient of 1 in 176.

The severance of the couplings between the tender and leading horse-box was the first thing that attracted the driver's attention. The automatic action of the brake on the rear five vehicles of the train was then brought into play, causing them to stop in about 180 yards, all off the rails, but without any serious disturbance of their running position.

There was apparently nothing whatever in the condition of the permanent way to account for the accident. One of the two horse-boxes mounted the outer rail of the curve owing to some jerk received at the time, perhaps from the driver putting steam full on on perceiving that the Muchalls up home-signal was right for him. If the trailing wheels of the first horse-box were the ones that first left the rails, it is probable that the front buffers of the second one, being somewhat lower than the rear buffers of the first, may have exerted a slightly lifting action on the rear of the one in front of it, and have thus contributed to the accident.

It was observed in the report that comparatively light top-heavy vehicles with short wheel-bases of nine feet, such as the two horse-boxes next the tender of this train, are not suitable for running at high speed, and that they should not form part of trains, and especially the front of trains, timed to run at high speed.

The automatic continuous brake did good service in preserving the rear five vehicles of the train which were fitted with it from serious damage.

GREAT EASTERN:

October 15th.—The engine and vehicle next to it of a London, Tilbury, and Southend Company's up workman's train from Barking for Fenchurch Street left the rails of the up line at the junction crossing just after starting from Stepney station.

Seven complaints of slight injury have been received.

This accident was a very singular one, the whole of the wheels of a 10-wheeled tank engine, after travelling about 50 yards from the place where it had stopped at Stepney junction station, took the wrong side of the diamond crossings of the right-hand up line and Stratford down line, and instead of proceeding along the up line came to a stand on the rails of the down line about 25 yards from the diamond points, the brake-carriage next the engine being dragged off the rails, but still coupled to it and to the vehicle behind it.

The engine was running with the coal-bunker in front, the wheels under which had radial axle-boxes admitting a play of $1\frac{1}{2}$ inches to the right and left, there being powerful horizontal springs on the axle to keep the wheels in their true position when running on a straight line, the weight on these wheels being about $8\frac{1}{2}$ tons.

The curves of the right-hand up line from the place from which the engine started had radii of five, six, and nine chains in succession; the super-elevation of the outer rail being necessarily small.

This accident was by no means the first one in which an engine running with radial axle-box wheels in front—the axle being provided with similar spiral springs to those which this engine has—has taken the wrong side of the fixed points at a diamond crossing. It was suggested by the Inspecting Officer that if the company could see their way to running such engines with the bogie always in front, it would no doubt be a great safeguard against the recurrence of a similar accident to the present one, or failing this that they should consider what alteration they could introduce into the arrangement of the radial axle-box wheels so as to guard against the danger of these wheels taking the wrong side of the fixed points of a diamond crossing.

MANCHESTER, SHEFFIELD, AND LINCOLNSHIRE:

March 30th.—An up excursion train from Liverpool for London had passed through Penistone station when the engine, tender, and 17 out of the 19 vehicles composing the train left the rails, the tender (which broke away from the engine) being thrown on its side foul of the down line about 140 yards after the engine left the rails. When in that position the excursion train was run into by the engine of a down mail train from King's Cross, which had nearly stopped at the time.

In the excursion train, which was fitted throughout with the automatic vacuum-brake, one passenger was fatally and 12 others were more or less seriously injured. Complaints of injury were also received from about 50 other passengers. The fireman of the train was also injured.

The accident appears to have been caused by the breaking of the leading axle of the engine of the excursion train, resulting in the break-up of the front of the train. This fracture of the axle would seem to have occurred on the train leaving Dunford Bridge, and if so, the train would have run with the broken axle for a distance of nearly six miles. The speed of the train was variously estimated at 15, 20, and 25 miles an hour, but the statement of the driver that he applied the brake with full force at a point about 130 yards from where the engine stopped, points to a higher speed, more in accordance with the results of the accident, and of the time of running from Dunford Bridge, namely, six miles in about 10 minutes.

The fracture of the axle was owing to the existence of an extensive flaw at the left shoulder, at the seat of the left wheel; the flaw had been one of gradual growth, was crescental in form, and extended through about half the area of the axle; unless the wheels had been removed the existence of this flaw and of a corresponding one (though not so deep seated) at the right end of the axle could hardly have been detected by any examination; the axle had been thoroughly examined in January last, and no symptoms of a flaw had been observed; it had also been examined in a customary fortnightly examination the day before the accident by an experienced fitter.

Considering the long mileage of this axle, which had run no less than 619,414 miles, it should, in the opinion of the Inspecting Officer, have had the wheels removed from it when the engine was in the shops in the previous January, and then the extensive flaw at the left wheel seat would no doubt have been discovered and the axle condemned in consequence.

The Inspecting Officer was of opinion that this accident again raised the important question of how many miles axles should be allowed to run before being submitted to an exhaustive examination as to the existence of flaws; and he suggested it as a question which might be settled by a conference of locomotive superintendents of the various railways.

NEATH AND BRECON :

July 13th.—The engine and two front vehicles of a passenger train ran off the rails between Cray and Devynock stations, on a falling gradient of 1 in 52, when running from a curve of 18-chain radius to the right on to a short piece of straight line between the 18-chain curve to the right and an 18-chain curve to the left. The permanent-way appeared to have been in good order.

No personal injury occurred.

The accident appeared to have been caused by the top plate of the near-side leading-spring of the engine having broken into three pieces while the train was running. This plate had an old flaw, which extended about two-thirds through the fracture that was next to the buckle; and when the buckle was taken off, it was found that nine other plates out of 16 of which the spring was composed were broken. The other springs of this engine were afterwards found to be defective. The work of overhauling and renewing the defective parts of the engine appeared not to have been carefully done.

NORTH-STAFFORDSHIRE :

February 28th.—As an up express train from Manchester was approaching the loop-line junction signal-box, Harecastle, the engine left the rails at the V point of the crossing of a sidings junction, and, with the tender, ran for about 183 yards before being brought to a stand, when it was found that the leading wheels only had kept on the rails. The coupling between the tender and the leading carriage having parted, the whole of the carriages took the direction of the loop-line, diverging towards the left hand, and when they came to a stand, having run for about 172 yards, it was found that the whole of them were off the rails.

Three passengers were slightly injured.

From the marks found upon the permanent-way, it was apparent that the crank-pin on the left-hand side driving-wheel of the engine broke about 80 yards north of Harecastle north signal-box, so that the leading end of the left-hand connecting-rod fell to the ground. The train ran safely for a distance of about 516 yards from the point where the crank-pin broke, passing on its way one siding-connexion, until it reached the crossing of a road leading from a siding on the up side of the line, when the loose end of the connecting-rod struck the wing-rail, and jammed between it and the V point, forced the driving-wheels off the rails. The driver did not discover that anything was amiss until he was about 80 yards south of Harecastle north signal-box, where he was running at a speed of between 45 and 50 miles an hour, and, although he then applied his steam brake and vacuum continuous brake the train was still running at a speed of probably about 15 miles an hour when the engine left the rails, breaking the coupling between the tender and the leading vehicle of the train. Owing to this parting of the train, the vacuum-brake on the tender and all the vehicles in the train except the two brake-carriages, upon which there was automatic action, became inoperative.

The crank-pin which failed was made of the best Lowmoor iron. The fracture showed a very bad old flaw, extending so far into the metal that it left sound only a strip of seven-eighths of an inch in width along the diameter of the pin.

WREXHAM, MOLD, AND CONNAH'S QUAY :

February 23rd.—As a passenger train from Buckley was approaching Wrexham, at a speed of about 24 or 25 miles an hour, an empty horse-box next to the engine mounted the outside rail of a curve, the engine itself being afterwards pulled off the rails at a V crossing, and becoming unhooked from the horse-box, came to a standstill foul of the Great Western Railway; the rest of the train remained coupled together, but off the rails.

Eleven passengers, the driver, fireman, and guard were injured.

This accident appeared to have been caused by the unsteady running of the horse-box, which was not tightly coupled up.

The empty horse-box was a light vehicle compared with the engine and the other vehicles behind it. It was possible that some slight jerk by the application of the brake on the train or by the shutting off steam may have contributed to the horse-box leaving the rails.

C.—Accidents from Trains entering Stations at too great Speed.

Under this head 12 accidents were inquired into, by which 81 passengers and 4 servants of companies were injured.

The whole of these accidents were primarily due to errors of judgment or want of care on the part of the drivers, but in one of them the neglect of a signalman, and in another the forgetfulness of a signal porter contributed to the accident.

GLASGOW AND SOUTH WESTERN :

July 8th.—The seven rear vehicles of a train from Glasgow to Largs, which had been detached at Fairlie station, were being taken by the shunting-engine to Fairlie Pier station, and the driver found himself unable to stop at the proper place, when engine came into collision with the buffer-stops. Sixteen passengers in all complained of slight injuries.

It appeared that the driver, thinking he was running too slowly, applied a little steam and increased his speed, but finding when within 70 yards of the buffer-stops that he was running too fast, reversed his engine, but was unable to stop before striking the buffer-stops. The guard did not appear to have applied the brake at the usual place. Had the engine been properly equipped, the automatic vacuum-brake, with which the train was fitted, would have

been available, and the driver would have had no difficulty in stopping the train. The driver had been on duty for 6½ hours, and the guard 4½ hours at the time the collision occurred.

GREAT WESTERN:

August 2nd.—A portion of a passenger train consisting of a tank-engine and four vehicles which were being shunted back into the loading bank-siding at North Road station, Plymouth, to pick up two coaches which were to be taken on to London, was pushed back too fast, and struck the two coaches at about walking speed, driving them against the stop-buffers at the end of the siding.

Two passengers complained of being slightly hurt.

This slight collision was caused by the carelessness of the porter, who was doing the duty of the regular shunter, then absent on leave. He called back the train by means of a green flag, but did not use the red flag in sufficient time to stop the train, so that no brake, except the hand brake of the fireman, was put on before the collision occurred. The driver did not appear to have exercised as much care as he might have done.

The porter had been on duty about six hours, the driver and fireman about nine hours.

LANCASHIRE AND YORKSHIRE:

July 7th.—A down passenger train from Liverpool for Preston, when entering Preston station from the East Lancashire line, overran the proper stopping place and came into collision with the buffer-stops.

Two passengers and the guard of the train were injured.

This slight collision was due to the fact that the driver was not only ignorant of the signals and line leading into Preston from the East Lancashire line, but was singularly unobservant. Had it been otherwise he must have found out that his train was going into one of the bays when he was turned through the facing points on the down main line, 300 yards outside the down main line platform, and across the up main line. The train was running at moderate speed and the driver might easily have pulled up in time if he had known where he was. He had been on duty for about 7½ hours.

LONDON AND NORTH-WESTERN:

March 7th.—A down train on arriving at Holyhead station failed to stop at the appointed place, and came into collision with the stop-buffers at the end of the station platform.

No passengers were injured, but the fireman who was travelling on the engine, and the guard who was travelling in the rear van, both jumped on the station platform before the train stopped and hurt their heads.

The collision appeared to have been caused by the continuous simple vacuum-brake failing to act in consequence of the vacuum-pipe between the tender and the first carriage truck becoming disconnected. The collision would not have occurred except for the negligence of the engine-driver, who allowed his train to approach the terminal station at Holyhead at such speed that the train could not be stopped by means of the steam-brake on the engine and tender and the screw-brakes in the guards' brake-vans.

The Company are now gradually replacing this vacuum-brake with the automatic vacuum-brake. The Inspecting Officer expressed an opinion that the Company should take measures to prevent their drivers approaching terminal stations at such speed as to require to use the continuous brake to stop their trains.

August 3rd.—A passenger train from Llandudno, timed to meet a main line train at Llandudno junction ran past the branch line platform and struck a train of empty coaches which was standing in a siding, about 100 yards from the platform where it ought to have stopped.

Three passengers are reported to have been shaken.

The collision was caused by the neglect of the driver to ascertain what brake his train was fitted with before leaving Llandudno. He had been on duty nearly seven hours when the collision occurred.

September 1st.—A down passenger train from London, when entering Crewe station, was by a mistake turned onto a bay line, instead of on to the down loop line as usual, and came violently into collision with the buffer-stops.

Eight passengers were returned as having been injured the injuries of three of them being serious.

The collision was due:—

(1.) To the points having been set for the bay line to receive the Birmingham train, instead of for the loop line to receive the London train;

(2.) To the signal for the loop line having been passed at danger by the train, the drivers of which knew that they ought to run up the loop;

(3.) To the speed of the train having been higher than it should have been when entering Crewe, which, in this respect, is treated as a terminal station.

The Inspecting Officer reported that the manner of keeping the signalmen informed as to the running of trains at Crewe appeared to be most unsatisfactory, and that the accident was to be attributed in a great measure to this cause, that instead of a negative system, under which the signalman is only informed when trains are running out of course, he should receive positive information in every case as to whether the train which is approaching is upon the fast or the slow line.

The two drivers of the train were in some measure responsible for the collision; they omitted to notice that the wrong signal was off for them, although it was visible for at least 1,200 yards, and approached the station at a higher speed than they were entitled to according to the rules.

It was recommended by the Inspecting Officer that the Company should issue such an order as would ensure the signalman receiving as much information as possible regarding the running of trains; that additional distant signals should be put up; that front brake-pipes should be fitted on all the engines, so that the leading driver, who is in the best position for seeing signals, may have the power of applying the continuous brake.

The leading engine-driver at the time of the accident had been on duty about 10 hours, and the train-driver about 4½ hours.

LONDON AND NORTH-WESTERN AND GREAT WESTERN JOINT:

September 16th.—A Great Western train ran into two gas-tank waggons that were standing about six yards from the stop-buffers at Addison Road station.

The gas-tank waggons were driven forward against the stop-buffers, which were damaged, and then the waggons rebounded against the engine, which came to a stand about the spot where it struck the waggons. This slight collision appeared to have been caused by the engine-driver not having taken sufficient account of the greasy state of the rails.

The fireman applied the screw-brake before the engine reached the platform, and the engine-driver, firemen, and guards thought that the train would be stopped before reaching the gas-tank waggons until the engine was close to the waggons, when the fireman tightened the brake, the engine wheels were skidded, and the engine ran forward and struck the gas-tank waggons at a speed of about one mile an hour.

As soon as the engine wheels skidded, the driver applied the continuous brake, which appears to have acted and brought the coaches to a stand, at the moment the engine struck the gas-tank waggons. The stop was rather sharp, and as the passengers were preparing to alight they were somewhat knocked about.

Eight passengers are reported to have been shaken and bruised, but their injuries are believed to be slight.

The engine-driver had been on duty about 3 hours and 40 minutes.

METROPOLITAN:

January 16th.—A Midland passenger train from South Tottenham, when running at about four miles an hour, came into collision with the buffer-stop at Moorgate Street.

Eight passengers are returned as having complained of slight injuries, and the bookstall-keeper was severely and a bystander slightly injured.

The collision was caused by a mistake of the driver, who had been on duty for about 4½ hours and who stated that having applied the vacuum-brake slightly when about 100 yards from the station, he found when about 65 yards from the buffer stops that his train was coming to a stand too soon, whereupon he released the brake by the application of the big ejector and shortly afterwards reapplied it though too late. The two guards, however, gave evidence that between Aldersgate, or Barbican and Moorgate the small ejector on the engine was not properly working, and if this were the case, the fact of the train not being

brought to a stand by the second application of the brake would be accounted for by want of power in the reservoir, the engine-driver having probably, accidentally or inadvertently, shut off the small ejector when running.

The Inspecting Officer expressed his belief that it would prevent many buffer-stop accidents if the rule for entering terminal stations were that the continuous brake should never be used except on an emergency, and not as at present upon most lines, where the rule is that the speed shall be such that the train *can* be stopped by the use of the hand-brakes only.

NORTH BRITISH :

September 24th.—A passenger train from Edinburgh when entering Musselburgh came into collision with the buffer stops at a speed of about two miles an hour.

Thirteen passengers complained of injury, but it was stated that none were seriously hurt.

The collision was due first to the driver omitting to get his train under such command when entering the station that he could stop it by the hand-brakes only, and then to the failure of the continuous brake to complete the stop when the wheels of the engine were skidding, either because it was not applied soon enough, or because the handle was out of order.

The driver had been on duty for under 3 hours, but it appeared from the evidence that his tour of duty upon four days in the week was over 15½ hours.

The Inspecting Officer recommended that the steam-brake upon the engine and the continuous brake upon the train, which are applied by two different handles, should be altered so that both could be applied by one action.

NORTH-EASTERN :

September 7th.—A Lancashire and Yorkshire train from Manchester came into collision with the buffer-stops at York station.

Thirteen passengers are stated to have complained of injuries, none of which were serious.

The collision was attributed to a miscalculation of the speed by the driver, but it was thought that he was depending too much upon his continuous brake for stopping; he seemed to have had his train under control at first, for he released the continuous brake with which he had been checking the speed, but appears to have been

too late in applying it again. If he had been running at the speed enjoined by the regulations, namely, at such a speed that the train might be stopped by the use of the hand-brakes only, the collision would not have occurred.

At the time of the accident he had been on duty about 3½ hours. According to the evidence he had been on duty the previous day about 15½ hours.

NORTH LONDON :

June 26th.—A London and North-Western Company's train from Mansion House, when arriving at Broad Street station, two minutes late, came into collision with the buffer-stop.

Two passengers complained of being shaken.

The collision, which was only a slight one, was caused by the driver of the train, when entering Broad Street station, releasing his brakes upon finding that his train was pulling up too quickly, and then miscalculating the distance and omitting to re-apply the brakes soon enough. He had been on duty for about three-quarters of an hour.

SOUTH-EASTERN :

June 24.—A passenger train from Bromley, which was to be attached at Grove Park station to a train from Tonbridge for London, over-ran the place where it should have stopped to allow the engine to run round its train, and came into collision with a third-class brake-carriage standing against the buffer-stops at the end of the bay.

Five passengers complained of injury.

The collision was caused by the driver of the train having miscalculated his power of stopping the train in the usual place, about 230 yards from the buffer-stops, and then having been unable to diminish the remaining speed, which was stated to be about six or seven miles an hour, before the engine ran into the brake-carriage and knocked it over the buffer-stops. Some rain had fallen while the train was running between the distant-signal and the home-signal, which, combined with some loose dried grass lying upon the rails, made them so slippery as to interfere with the proper action of the brakes, and the 120 yards of falling gradient immediately preceding the buffer-stops rendered the stoppage of the train still more difficult. The driver had come on duty 3½ hours before the collision.

D.—*Collisions between Engines and Trains following one another on the same Line of Rails, not including those at Junctions, Stations, and Sidings.*

Under this head one collision was inquired into by which 13 passengers and 1 servant of a company were injured.

MIDLAND :

January 3rd.—During a dense fog a passenger train from Nottingham for Chesterfield came into collision with the rear of a loaded coal train from Hucknall sidings, which, having been standing at Lenton South junction up starting signal, near Nottingham, for about five minutes, had just started, and had proceeded for about 120 yards when it was overtaken.

The guard of the coal train was seriously injured, and 13 passengers in the passenger train were returned as being slightly injured.

The accident, due to failure of block working and the mistake of a signalman, who had omitted to signal for permission to let the passenger train enter the section, was in a great measure to be attributed to the state of the weather. There was a very thick fog. Between the time that the coal train passed and the acceptance of the passenger train, the signalman was dealing with a down goods train which had to cross the up passenger line on to the down goods line. He had been on duty for five hours.

E.—*Collisions at Junctions.*

Under this head four collisions were inquired into, by which 1 servant of a company was killed and 88 passengers and 6 company's servants were injured.

Two of these collisions were due to the want of care of the engine-driver; one to the mistake of the signalman in lowering the signal too soon; and one to the fault of the yard porter.

CITY OF GLASGOW UNION :

February 15th.—As a Glasgow and South-Western Company's goods train from Govan for College goods-yard was crossing the up main line from St. Enoch

station at Clyde junction on its way to College it was struck about the centre by the engine of a Glasgow and South-Western Company's passenger train from St. Enoch for Kilmarnock, which engine had been allowed to overrun the junction up home-signal by about 10 yards.

One passenger was stated to have been slightly injured.

The collision was immediately caused by the driver of the passenger train having overlooked the fact that the Clyde junction home-signal, which he could plainly have seen 230 yards off, was at danger until he was so close to it that, though the speed did not exceed 15 miles an hour, and he used every means to stop, he failed to do so, and his engine came into collision 10 yards outside the junction up home-signal, at a very slow rate of speed, with the goods train. The guard of the train applied his hand-brake. Had he applied the automatic vacuum-brake, which he could have done, to the seven vehicles of the train, though not to the engine and tender, the train would no doubt have been stopped in ample time for the collision to have been prevented.

The Inspecting Officer stated that the occurrence of this collision pointed to the necessity of some alteration in the mode of working at this junction, and offered suggestions with regard thereto.

GLASGOW AND SOUTH-WESTERN :

June 20th.—A passenger train from Largs for Glasgow came into collision at Johnstone junction with the rear brake-van of a goods and mineral train from Johnstone for Greenock, the van not having been clear of the down main line when the signalman lowered the junction-signals to allow the passenger train to pass on its way to Glasgow.

No personal injuries were sustained.

The Inspecting Officer considered that the signalman should have assured himself that the tail of the goods and mineral train was clear before accepting the passenger train and lowering the signals for it. It is probable that no accident would have occurred but for a coupling having broken between the 26th and 27th waggons of the goods and mineral train, just as the 26th waggon was passing the junction facing-points, which caused the rear 13 vehicles to lose speed and finally stop with the rear brake-van foul of the junction. On looking again at the tail of the mineral train, and while still unaware that it had separated from the front portion, he saw that it was not clear of the down main line, and at once threw up his signals for danger, the passenger train being about 300 yards outside the distant-signal, and about 1,000 yards from the point of collision. He had been about 2½ hours on duty. The driver of the passenger train saw the junction distant-signal taken off when some distance from it, and also saw that the junction signals were at all-right, but on looking along the line he saw a porter holding out his arms, and in consequence he shut off steam, and then, seeing the junction home-signals against him, at once applied the Westinghouse brake and tried to reverse, but only succeeded in reducing the speed from 40 to 50 miles an hour to about 8 or 10 miles an hour.

The coupling which broke belonged to a trader's waggon; a careful examination would have shown that it was not in a fit condition to run before it left the yard.

LANCASHIRE AND YORKSHIRE :

December 7th.—A coal train from Plodden Lane for Rochdale, via Cheetham Hill junction, which was being assisted up the bank by a bank engine at the rear of the train, was, while standing at the junction signals on the down fast line, run into at the rear by a down passenger train from Victoria station for Ramsbottom. By the force of the collision the rear van of the coal train was thrown foul of the up fast line and run into by an up passenger train from Bacup for Victoria.

Two passengers had their ribs broken, and 60 others complained of injury. The fireman of the Ramsbottom train was killed on the spot, when, it is supposed, in the act of jumping off his engine. The driver and guard were also injured; the guard of the coal train was seriously injured; and two other of the company's servants, and the fireman of the bank engine.

These very serious collisions were principally attributed to the driver of the Ramsbottom train having failed to notice that the down advanced-signal for the fast line at Footbridge cabin was at danger as he approached and passed it. He had been on duty about 10½ hours when the collision occurred. He was no doubt misled in approaching the Footbridge cabin down advanced-signals by not having been, as he ought to have been, stopped, or nearly stopped, at the down home-signals, and then allowed to draw on to the advanced-signals, a caution-signal being shown from the signal cabin as he passed it.

The signalman in the Footbridge cabin, an experienced man of 14 years' service as signalman, had come on duty at 10 p.m., about three-quarters of an hour before the collisions, to remain till 6 a.m.

The only blame attaching to him is for not having stopped, or nearly stopped, the Ramsbottom train at the down home-signal before allowing it to proceed forward to the advanced-signal.

For the second collision between the Bacup train and the brake-van of the coal train no one appears to be to blame.

LONDON, CHATHAM, AND DOVER :

November 14th.—While an up passenger train from Greenwich for Holborn Viaduct was running through St. Paul's junction its engine came into collision with the engine which had brought an up passenger train from the Crystal Palace to St. Paul's station, and which engine had in the act of running round a portion of its train been unnecessarily allowed to foul the junction just as the Greenwich train was approaching and passing it.

Complaints of injury have been received from 25 passengers, but it is believed that none of the cases are serious. One servant was injured.

F.—Collisions within fixed Signals at Stations or Sidings.

Under this head inquiries were held as regards 25 collisions, by which 7 passengers and 1 servant was killed and 143 passengers and 20 servants were injured.

The principal causes of these collisions may be summarised as follows :—

Nine were mainly due to mistakes of signalmen in block-working arising from forgetfulness or want of care; three to the mistakes of pointsmen; 11 were mainly due to want of care of engine-drivers in running their trains at too high a rate of speed, not having them under proper control, or not keeping a proper look-out for signals. One was due to foggy weather; two were due to want of proper interlocking arrangements; two to the want of block-working; two to the want of or the insufficient amount of continuous brake-power.

In three instances the satisfactory action of the continuous brakes were apparent in lessening the effects of the collisions.

CALEDONIAN :

December 2nd.—While a goods train from Edinburgh for Buchanan Street goods station, Glasgow, was moving forward after standing at the down home-signal of Sight-hill west junction, it was run into at the rear near St. Rolox station by an unattached engine which was on its way to the goods station to take out the 5.45 p.m. goods train for Leith; this engine a short time afterwards being

in its turn run into by a passenger train from Oban for Buchanan Street.

Six passengers, the driver, and four Company's servants travelling in the front brake-van were injured, one of the latter seriously. The guard of the goods train and the driver of the unattached engine were also injured.

Both of these collisions were brought about by a misunderstanding between the signalmen in Sight-hill East and West junction cabins. One of them had come on

duty two hours earlier than his proper time to oblige his mate, whose father was dying, and had been at work about 13½ hours at the time of the collisions. He committed a breach of rules in giving "Line clear" for the passenger train before the tail of the goods train had passed the St. Rollox starting-signal. He must too have been keeping a bad look-out, or he could hardly have failed to see that the goods train passed his cabin in a dislocated condition.

In a minor degree the drivers and firemen of all three engines seem to have been in fault.

The driver of the goods engine should have whistled, or sent his fireman to the signal-cabin, while he was standing seven minutes at Sighthill West cabin home-signal, and after the first collision should certainly have at once taken means to inform the signalman that there had been a collision.

The driver and fireman of the unattached engine must have been keeping an indifferent look-out not to have realised that the tail lights of the goods train were on the line they were running on long before they did so.

There is less excuse for the driver and firemen of the Oban train than for the driver and fireman of the unattached engine, for they were approaching Sighthill West cabin with the distant and home signals both at danger, and should therefore certainly have seen the lights showing from the rear of the engine they ran into, so as to know it was on the main line.

The drivers of the goods train, unattached engine, and passenger train, and the goods guard had been on duty about 6½ hours, three-quarters of an hour, 6½ hours, and 13 hours respectively, when the collisions occurred.

GREAT EASTERN :

August 9th.—An empty carriage train from Stratford standing on the main line waiting for the Liverpool Street Bridge signal to be lowered between Bishopsgate and Liverpool street stations, was run into at the rear by a passenger train from Norwich.

Two passengers complained of injury; and the guard in the rear brake van of the empty train was badly injured.

The evidence as to the cause of the collision was very conflicting. According to the evidence of the signalmen in the Bishopsgate and Liverpool Street cabins the signals were against the Norwich train, whilst the engine-driver and fireman of the Norwich train allege that the signals were off, and that the only signal they passed at danger was the Liverpool Street up main line distant signal, indicating to them that they would have to stop at the Liverpool Street bridge signals, which they were quite prepared to do. The driver of the train was stated to be a man of excellent character, of 18½ years service and well accustomed to work the main line trains in and out of Liverpool Street. The signalmen were also experienced men of good characters.

The driver had been at work about seven hours and the signalmen had been at work about half an hour when the collision occurred. The fireman was the first to observe the van of the empty train when about 80 or 90 yards from it, and the speed was then probably about 20 miles an hour, and was reduced by the application of the Westinghouse brake to about 10 miles an hour on collision. With the Liverpool Street up distant signal at danger the driver should have been coming round the curve more cautiously than he appeared to have done.

It was mentioned in the report that notwithstanding the very large number of trains passing in and out of Liverpool Street station in the course of the day, this is the first collision which has occurred between that station and Bishopsgate, a circumstance reflecting great credit to all engaged in conducting the traffic.

December 13th.—During a dense fog, while a down passenger train was standing at the down platform at Fordham station, it was run into at the rear by a down passenger train.

Three passengers and a guard were injured.

This collision, in which one down passenger ran into the rear of another down passenger train standing 225 yards inside the Fordham junction home signal, or 265 yards from the spot at which the driver of the following train acknowledged that he knew the home-signal to have been at danger, must be primarily attributed to his having lost his way in the dense fog which had come on suddenly, about three-quarters of an hour before the collision. The

fog became very dense as the second train approached Fordham, so that the driver was unable to see the usual landmarks; when he ran over two fog-signals he at first thought they were at the Fordham distant-signal, but on immediately afterwards catching sight of the home signal he realised that he was at the home-signal and not at the distant-signal; he at once shut off steam and applied the break with full force, but the train was still running at a speed of five or six miles an hour when the engine struck the tail of the train, standing about 225 yards inside the home-signal. The driver probably under-estimated the speed, which must have been nearly 40 miles an hour and was certainly not a judicious speed at which to approach a junction station, with the knowledge that the station was not clear, and considering the dense fog prevailing.

The driver had been on duty about 11½ hours when the collision occurred.

The collision would probably have been prevented had there been a fog-signalman attending to the Fordham distant signal.

GREAT NORTH OF SCOTLAND :

July 25th.—A mixed train from Fraserburgh for Aberdeen, when running at a speed of 25 miles an hour, came into collision at Brucklay station with six waggons standing in a siding, and drove several of them over the mound at the end of the siding. All the vehicles of the train left the rails; one carriage had all the wheels pulled off, and two were thrown on their sides.

Seven passengers and the guard complained of being injured. One man who had been attending to his cart in the station yard was found dead under a carriage.

The collision was caused by the mistake of a young and inexperienced pointsman calling the passenger train on when the points were set for the siding. He had only been in railway employment for 23 days.

The engine-driver did not observe that the points were set wrong until the engine swerved on running through the points. He then applied the Westinghouse brake which was fitted to the engine and tender but not to the train.

The report of the inquiry called attention to the fact of the railway, which has but a single line of rails, being worked without a train staff or train tablet; to the facing-points on the passenger line not being interlocked with the signals, and to a young and inexperienced man being employed to work the points.

The pointsman had been on duty 10 hours, and the driver seven hours when the collision occurred.

November 21st.—An up passenger train from Keith, fitted with Westinghouse brake, when entering Huntly station, was turned at the north loop points on to the down loop line, and came into collision with a down passenger train from Aberdeen, the engine of which was standing about 70 yards inside the loop points.

The down train was driven back for 53 yards, but the only wheels thrown off the rails were the trailing wheels of a Caledonian carriage next behind the tender. The two leading carriages were buffer-locked, but none were telescoped. In the up train no vehicle left the rails.

Twenty passengers are returned as having complained of injury, but it is stated that only three or four were seriously hurt. The driver of the up train and the fireman of the down train were badly injured.

This collision, which would probably have resulted in far more serious consequences had it not been for the satisfactory action of the continuous brake with which the up train was fitted, and which was promptly applied by the driver, was caused by a blunder of the pointsman, who did not carry out the operation of admitting the train in accordance with the rules of the Company, and seems to have lost his head when the collision was imminent.

He did not go to the points until he had ascertained at the station that the train had left Rothiemay, the next station northwards, and when he reached them he at once took off the distant-signal—the home-signal, worked from the platform, having been already lowered—without first setting the points in the right direction for the up line. Neither did he try the points before the train was due.

It was apparent that no collision would have occurred if the pointsman had either tried the points when he first reached them, had pulled them over for the up line before

lowering the distant-signal, or had shown a danger-signal to the driver instead of a green or caution-signal, until such time as he had set the points right.

Neither would the collision have occurred upon a line properly signalled and with the points and signals interlocked.

The Inspecting Officer added that the Great North of Scotland Railway Company had been for some time past doing a great deal to improve their main line by doubling and relaying operations and by interlocking, and that all the stations south of Huntly had been already interlocked.

GREAT WESTERN :

January 19th.—A Taff Vale passenger train from Cardiff ran into a Great Western light engine which was standing on the Penarth curve at the south of the engine-shed cabin about half a mile from the Great Western Cardiff station.

Six passengers and four servants of the Company were reported to have been injured.

The collision was caused by the neglect of the signalman in the engine-shed cabin, who did not appear to have known that the light engine had been standing for some minutes close to his cabin. The driver of the passenger train did not observe the light engine until he was within 30 yards of it. He had just applied his automatic vacuum-brake, and the speed of the train, which was about 15 miles an hour, was slightly checked before the collision took place.

The signalman had been on duty about an hour and a half when the collision occurred.

March 27th.—A passenger train, consisting of a tender, an engine, a brake-carriage, and another carriage, was being pushed back from Barrs Court junction towards Barton station, when it ran into a goods train which was standing opposite the Worcester sidings on the Barton branch line.

One passenger and the guard of the train were reported to have been slightly injured.

The collision was caused by the neglect of the driver of the passenger train, who ran past the Worcester sidings distant-signal which was at danger, and ran his train into a goods train which was standing on the line in front of him. The tender was fitted with a screw-brake, the engine with a steam-brake, and also with an automatic vacuum-brake which was connected with the carriages, but the latter could only be applied by the driver. The guard had a screw-brake in the brake-compartment of the carriage.

The driver and fireman had been on duty about 5½ hours and the guard about 5½ hours. The signalman, who was also to blame for not having cautioned the driver before making the signals for him to run to Barton station, had been on duty about nine hours when the collision occurred.

The practice of pushing passenger-carriages in front of the engine, which prevents a driver from having a good view of the line, and is always attended with danger, has been frequently animadverted upon by the Inspecting Officers. The necessity for the practice in this case will be shortly removed by the construction of a curve line at Hereford.

HIGHLAND :

February 14th.—As a down passenger train from Forres was entering Elgin station on the down loop line, it came into collision with a pilot engine, which had arrived a few minutes previously in front of an up passenger train from Keith, and which, having been uncoupled from the train, was on its way to the sidings at the west end of the station, and had fouled the down loop-line. The leading corners of the two engines met, and the pilot engine was driven back on to the train engine of the Keith train, which also had been uncoupled from its train and was following the pilot engine.

Three passengers were slightly injured.

The accident was caused by the action of the telegraph clerk in lowering the up starting-signal, as the signals were off for the down train, although he was quite aware that the down train was approaching and was close at hand.

Both drivers were in some measure responsible for the collision, especially the driver of the pilot engine, who was in the best position for seeing ahead. They knew that the down train was approaching, and that the signals were off for it. The only excuse for them is that there was a storm of snow and sleet at the time.

The evidence disclosed the fact that the regular hours of work of the driver of the pilot engine were excessive. The telegraph clerk had been on duty about 7½ hours, the driver of the pilot engine 12 hours, and the driver of the Keith train engine for about two hours.

It was stated in the report that the rules as to shunting operations required alteration; that had the signals been interlocked the collision would not have occurred; that there had been an alteration in some of the points at the east end of the station which had been brought into use without being submitted for inspection; and that, owing to two out of three vehicles composing the down train being Great North of Scotland stock fitted with the Westinghouse brake only, the automatic-brake on the Highland carriage could not be made use of.

June 17th.—A mixed train from Keith for Portessie, when starting from the Buckie platform line at Keith, was turned on to the line from Forres, and came into collision with a train of three empty carriages.

No person was injured.

The driver of the train did not perceive, until too late, that the points were lying for the crossing, and the engine ran across on to the down main line and came into collision with the three empty carriages of a train which had been shunted back after the train was emptied, and left standing upon the down line across the points of the cross-over road.

The immediate cause of the collision was the omission of the pointsman to turn the points of the slip-road after the engine had gone back. But the driver of the train could hardly have been keeping a good look-out, or he would have seen that the points were lying in the wrong direction.

The cross-over road and other additions at the station had been brought into use without having been submitted for inspection by the Board of Trade in accordance with law. No sanction would have been given for the use of the connexions in the state in which they existed at the time of the accident.

At the time of the collision the driver and pointsman had both been on duty for about 7¼ hours.

LONDON AND NORTH-WESTERN :

June 15th.—A passenger train from Wigan for Liverpool on being directed to draw forward from the north to the south end of the platform at the Wigan station, was followed and run into by a pilot engine the driver of the latter believing that the train was going away, and being unable to pull up when the train stopped at the south end of the platform. He had been on duty about an hour and a half at the time.

Three passengers were shaken and bruised.

June 29th.—A Midland Railway Company's train from Derby ran into a London and North-Western train of empty carriages at New Street station, Birmingham. Three passengers in the Midland train complained at the time of being shaken.

The collision was caused by the neglect of the engine-driver of the Midland train, who approached the station at such a speed as to be unable to stop his train until after he had run past the stop signal, and had struck the London and North-Western train, which was standing three or four carriage-lengths inside the signal. If he had kept a proper look out, and had applied his continuous brake, he could have easily stopped his train. He had been in the habit for some time past of running the same train to the same platform, but had never found another train standing there. He had been on duty about 2½ hours at the time of collision.

August 25th.—An up train from Peterborough when running at a speed of between 45 and 50 miles an hour, came into collision at the Welford and Kilworth station with a milk-van, which was standing across the up main line upon a through crossing leading to the sidings from the down main line. The whole of the train left the rails and came to a stand in about 196 yards.

Two passengers and the fireman of the train were stated to have been shaken.

This collision, the consequences of which were not so serious as might have been expected, considering the nature of the obstruction and the speed at which the up train was running, was caused by the station-master and the signalman neglecting to see that the milk-van, which had been

left at the station, had been placed upon the siding, clear of the main line. The driver of the up train which came into collision with the van had no chance of seeing it, as it was quite dark and he was running fast with clear signals. The station-master and the signalman had been on duty less than 1½ hours.

August 26th.—A passenger train from Crewe for Manchester ran past the signals at the south end of Stockport, and came into collision with an engine which had just attached some empty carriages, to the tail of a train from Liverpool, and was standing behind that train upon the down platform line.

Six passengers complained of injury, but it was stated that none of the injuries were serious.

It appeared that the train approached Stockport upon the down fast line with all the Stockport No. 1 signal-cabin signals at danger, and the distant-signals worked from the two next signal-cabins also at danger; that the driver was quite aware that he had to stop at Stockport No. 1 down home-signals, and yet with a train fitted with a continuous brake in operation upon all but one of the six vehicles, he over-ran the home-signals, and while still running at a speed of five or six miles an hour, came into collision with the engine 151 yards inside the point at which the train should have come to a stand.

The collision was attributed to the neglect of the driver in omitting to get his train under proper control when approaching Stockport with the signals at danger. The guard also besides applying his hand-brake should have opened the valve in his van to apply the continuous brake when he heard the driver whistling.

The signalman in No 1 cabin was justified under the special regulations in accepting the train from Crewe when the line was occupied only 151 yards inside his own home signal. This appeared to the Inspecting Officer hardly to be right, for the reason that the traffic is being worked under a system which cannot be properly called the "absolute block-system," safety depending entirely upon the due observance of the home-signal.

The ordinary block regulations provide a block-signal to meet the case when one train has to be brought in behind another at a station. This signal, given instead of the "Line clear" signal in reply to the "Be ready" signal, is the "section clear but station blocked" signal, and under it a driver is only allowed to approach after being stopped and cautioned at the block-signal cabin receiving this reply.

At the time of the collision the driver had been on duty for about 12 hours, and the guard for about 9½ hours.

October 4th.—An up local passenger train from Manchester for Stockport when near Longsight signal-cabin, about 1½ miles from Manchester, came into violent collision with two engines and a brake-van which were standing on the up fast line, along which the passenger train was running.

One passenger was killed on the spot, and five others died from the effect of injuries received. Complaints of injuries were sent in from 37 other passengers, and of these, in seven cases, the injuries were of a serious character. The driver of the passenger train was shaken and bruised.

The collision was primarily due to an act of negligence, preceded by an extraordinary delusion on the part of the signalman. His delusion was in imagining that it was possible for him to cross the two engines and brake van from the up fast line to the down fast line by restoring the points, which he had previously moved, to their normal position. Judging from his own evidence, he intended to bring the engines and van on to the up fast line, and he was guilty of a grave act of negligence in not assuring himself that they were clear of that line before proceeding to accept the "Be ready" signal for the up passenger train, and ordering the signals to be lowered for that very line.

It was remarked that the engine of the passenger train was running coal-bunk in front; had this not been so the driver might sooner have observed the red light on the chimney of the engine with which the collision took place; and further, that the force of the collision, and the disastrous consequences attending it, would have been much diminished had the train been fitted with more ample continuous brake-power than was the case.

The Inspecting Officer suggested, in order to guard against the recurrence of a similar mistake to that made by the signalman in the present case, that disc-signals might be introduced at the points in question, so that hand-signals might be, as far as possible, dispensed with, and that drivers might know exactly where they were intended to go. Also, that if a safe and trustworthy means could be devised for automatically preventing a signalman accept-

ing the block-signal for a train before it is right for him to do so, it would be a great safeguard against such a mistake as was the immediate cause of the present collision.

The signalman had been on duty about five hours, and the driver and fireman of one of the goods engines had been on duty 12 hours when the collision occurred.

LONDON AND SOUTH-WESTERN:

June 8th.—As an up passenger train from Reading for Waterloo was standing at the up advanced starting signal at Staines, a down goods train from Waterloo, which had been standing on the down branch line, was backed across on to the up main line, and into collision with the tail of the passenger train.

Six passengers were returned as having been slightly injured.

The cause of the collision was the imprudence of the two signalmen; the one should not have given permission for the goods train to be called back at all while the passenger train was at the up advance starting signal; the other should not have lowered the shunt back signal without warning the driver. These two men had been on duty 4½ hours.

July 29th.—As two empty carriages and a horse-box were being pushed from the horse-box siding on to the tail of an up passenger train from Southampton which was standing at Eastleigh station, the coupling between the shunting engine and the horse-box became detached, and the three empty vehicles struck the tail of the passenger train when running at a speed of about four miles an hour.

Four passenger were returned as having made complaint of injuries.

It was not found possible to assign a cause for the coupling becoming loose, as from the evidence it was in good order and the shackle was not at all stiff.

MANCHESTER, SHEFFIELD, AND LINCOLNSHIRE:

September 1st.—A down train from Rotherham, when approaching Sheffield, ran into the tail of a special fish train which was standing at the down home-signal worked from Sheffield east signal-box, and had just started to run through the station.

Five passengers were returned as having been injured.

The person immediately responsible for the collision was the signalman in No. 8 signal-box, for he broke the rules in accepting the passenger train from Woodburn junction when the fish-train was between him and No. 6 box home-signal. He also failed to carry out the rule which enjoins that trains must be stopped at his home-signal when the disc in his box worked from No. 6 box is not turned. Above all, however, the collision was due to the absence of proper block working between No. 8 and No. 6 boxes.

The signalman had been on duty for nearly five hours.

MIDLAND:

August 2nd.—A special up goods train from Bedford over-ran the signals at Shefford station, and came into collision with the engine of a down mixed train from Hitchin, which was at the time across the up line, in the act of attaching a waggon on the siding. Four passenger vehicles were clear upon the siding attached to the engine when the collision took place.

Five passengers complained of injury.

This collision, which would have had very serious consequences if the passenger train had not been reduced in length by two vehicles being detached and left upon the down line, occurred under the following circumstances:—

The special up goods train, which had left Bedford at 2.45 p.m., was approaching Shefford, and was actually in sight before the passenger train was backed across the up line, the guard of the passenger train having seen it when near the distant signal, as his train was being backed from the station to put off the rear vehicles. The station-master, however, did not see it until after the passenger train had been backed into the goods siding, when the goods train engine was only about 100 yards away, but he had heard this engine whistling when he was holding the main line points for the passenger train to cross. The driver of the mixed train heard the whistling when his train was standing at the platform, and saw it approaching when he was backing his train across the up line. The

driver of the goods train, upon seeing the up distant-signal at danger, opened his whistle, and he seems to have continued to whistle at intervals until the collision occurred. He had shut off steam at the top of the incline, and the tender-brake was applied when the distant-signal was found at danger, but nevertheless this signal was passed at a speed of about 25 miles an hour. The home-signal was seen to be at danger from a point near to the distant-signal, and about 80 yards inside the distant the engine was reversed, and back steam applied, and the sand-boxes were opened. In spite of these steps being taken and the guard's brake having been tightly applied before the distant-signal was reached, the goods train could not be pulled up, and it was running at a speed of some five miles an hour when it struck the side of the passenger train engine, 180 yards beyond the home-signal where it ought to have stopped. It was not possible for the station-master or the driver of the passenger train to take any steps to avert the collision, for the siding was not of sufficient length for the engine to be pushed back clear of the up line, and it was too late when they saw the goods train to pull the passenger train out on to the down line.

The immediate cause of the collision was the omission of the driver of the goods train to get his train at once under proper control when running down the incline of 1 in 120 when he saw the distant-signal at danger. He had at the time been on duty for about an hour. It was very rash to allow the passenger train to be backed across the up line when a train was approaching upon this line, with the engine whistling for the signals, and the station-master and the driver and guard of the passenger train were all more or less responsible for this having been done. It was clear that they all took it for granted that the goods train would be stopped at the up home-signal, and, judging from their conduct, it is to be feared that the practice of thus fouling a line before an approaching train has been stopped is not uncommon.

At the time of the collision the station-master had been on duty for about $7\frac{1}{2}$ hours, the driver for about $8\frac{1}{2}$ hours, and the guard for about $8\frac{1}{2}$ hours.

The collision is one which would not have occurred under a proper system of block-working, and the want of this upon a line of this importance is not creditable to the company.

If the engine of the goods train had been fitted with a steam-brake the train might probably have been stopped in time, and it is to be hoped that before long the necessity of so fitting all goods engines will have been recognised.

September 3rd.—As eight carriages forming a train from Morecambe for Leeds were standing at the Morecambe up platform line, the engine, which was coming from the turn-table, and making a shunt in order to get to the front of the train, ran at too high a speed through a cross-over road, and came sharply into collision with the rear vehicle, a bogie third-class carriage.

Ten passengers were injured and a servant of the company, who was standing on the platform, was knocked down by an open van door.

The collision was due to an error of the driver, who, on coming out from the turn-table road, ought to have stopped on the cross-over road; instead of which he had not got his engine under proper control and ran about 20 yards further than he should have done, striking the tail of the train when still running at a speed of six or seven miles an hour. The Inspecting Officer recommended that the company should put in facing slips.

The driver had been on duty at the time for $5\frac{1}{2}$ hours.

September 14th.—A London and North-Western Company's train, from Derby to Birmingham, being suddenly stopped to allow two passengers to alight immediately after it had started from Burton, was run into by a Midland empty train.

Three passengers were returned as having been slightly injured.

As the London and North-Western driver used his continuous brake he came to a stand very suddenly, after having run for not more than 15 or 20 yards, and the Midland driver, who had started to bring his train forward, having no warning beyond seeing the train in front come suddenly to a stand, was unable quite to stop his train, even by the use of the continuous brake, and came slightly into collision with the rear vehicle. The driver could hardly be blamed for the accident, which took place during the performance of an operation which is of daily occurrence at most large stations.

November 29th.—A Midland express from London to Bradford, when running through Normanton station, came into collision with two empty Lancashire and Yorkshire

carriages which were standing upon the down main line 57 yards north of Normanton station north signal-cabin, waiting to be crossed on to the down line.

The empty carriages were driven forward on the down line for about 350 yards, when one of them left the rails, and the express came to a stand in about its own length from the point of collision.

Two passengers were returned as having been slightly injured.

The collision, which would have been a serious one if the Lancashire and Yorkshire carriages run into by the Midland express had been loaded instead of empty, was due to the omission of the signalman in Normanton station north signal-cabin to put back to danger the platform line down home-signal which he had lowered for the empty carriages to be drawn forward, so that these carriages, which, owing to the arrival of a train upon the up line, he was unable at once to cross to their destination on the up side, were left standing without any signal protection.

The driver of the express, finding the distant-signal at danger, was running cautiously into the station, but when he saw that the home-signal was off he naturally thought that it had been lowered for his train, and he applied steam and increased the speed of his train to probably about 20 miles an hour.

Owing to the smoke and steam which was hanging about, he did not see the red light at the tail of the carriages until he was about 60 yards from it, and, although his continuous brake was promptly applied and acted well, he was unable to bring his train to a stand before striking the empty carriages with such violence that they were driven forward about 350 yards.

The driver was not to be blamed, for the proper signal for the line on which he was running was off, and it is easy to miss seeing the position of a red tail light, however good a look-out may be kept.

At the time of the collision the signalman had been on duty for about $5\frac{1}{2}$ hours.

MIDLAND GREAT WESTERN OF IRELAND:

September 30th.—A down special train of empty wagons came into collision at Carrick-on-Shannon (engine with engine) with an up mixed mail train from Sligo for Mullingar. There was only one passenger in the mail train and neither he nor any servants of the company were injured.

This collision was caused by the negligence of the driver of the down special train in not paying proper attention to the signals when approaching Carrick station.

The porter in charge of the signals imprudently ordered the driver of the mail train to draw ahead foul of the down loop line when he knew that the down special train was within a short distance of the station, and he was greatly to blame if, as seems not unlikely, after having once taken off the down signals for the special train, he reversed them when that train was near the distant-signal.

The loop line and platforms at Carrick station appear to be too short for properly dealing with the trains, and should be lengthened. The home-signals also should be placed at the facing-points, and starting-signals should be provided.

The driver of the special train and the fireman had been on duty about 12 hours when the collision occurred, and, but for it, they would on their arrival at Boyle, have completed the objectionably long spell of about 13 hours work.

NORTH-EASTERN:

March 2nd.—A North-Eastern Company's up goods train, from Hull for Selby, when drawing out of a siding joining the up line at Staddlethorpe, was run into by a Lancashire and Yorkshire Company's up goods train from Hull for Liverpool. The force of the collision threw the engine of the latter train foul of the down line, where it came into collision with the rear portion of a North-Eastern Company's down express passenger train (which was passing at the time at a speed of about 60 miles an hour) from Leeds for Hull. The last two carriages of the passenger train, which were empty, were detached and more or less destroyed, the front part being brought to a stand by the action of the Westinghouse brake in about 210 yards, which was remarked upon by the Inspecting Officer as one of the best stops that he remembered to have met with.

Two passengers in the express passenger train complained at the time of injury, but were able to prosecute their journey.

This double collision was primarily caused by the comparative ignorance of the driver and stoker of the Lancashire and Yorkshire goods train of the nature of the signals at Staddlethorpe junction in which an alteration had been recently made. The driver had seen the new up stop signal at danger, and when about 50 yards outside it, the speed of the train being six or seven miles an hour, he applied the steam-brake to his engine and tender, reversed his engine and opened the sand valve, but had time to do nothing more before coming into collision at a speed of three or four miles an hour, about 60 yards inside the new up stop-signal with some of the waggons of the North-Eastern goods train, which train was moving at the time out of a siding on to the up main line. He was deceived by the lights on this train, one of the three red lights having been wrongly turned by the guard to a white light, the usual indication either that a train is in a siding or is running on an independent line parallel to the main line.

The driver and stoker of the Lancashire and Yorkshire train had each been on duty about 2½ hours, and the guard of the North-Eastern train about 6 hours.

Certain alterations of the signals were pointed out as desirable in the report, and it was suggested that if the North-Eastern Company find it impossible to work block system with their goods and mineral trains without giving "line clear" to the cabin in the rear directly the tail of a train had passed the home-signal, whereby the block interval may be reduced to the thickness of a signal post,

they should, at any rate, instruct their signalmen to use the block signal, "Section clear, but station blocked."

SOUTH-EASTERN :

September 30th.—The Dover portion of a down passenger train while standing alongside the Tunbridge down platform was run into at the rear by an unattached engine which had just before placed three vehicles on the rear of the train.

Complaints of injury were received from five passengers. The train was being drawn forward to bring the rear vans opposite some luggage which had to be loaded into them, and on stopping was run into by the unattached engine, the driver and fireman being under the impression that the train was going right away.

October 15th.—A passenger train from Enfield which was waiting between Stony Street junction and Cannon Street station was run into by a train from Addiscombe Road running at the time at a speed of about four miles an hour, the driver of the latter train having mistaken the junction signal for his signal. The curve in the railway and a train from Greenwich prevented the driver seeing the Enfield train until he was within about two carriage lengths of it. He had been on duty about 2½ hours. Three passengers were reported to have been shaken.

G.—Collisions between Engines or Trains meeting in opposite directions.

Under this head two accidents were investigated, by which 24 passengers were injured.

One of the collisions was due to the engine-driver having started from the bay line while the signal was against his train; and the other to the signal-porter wrongly opening the siding points.

CITADEL STATION, CARLISLE :

January 21st.—As a Glasgow and South-Western Company's passenger train from Glasgow was running into Carlisle station it came into collision (engine with engine) with a Caledonian Company's train from Carlisle for Beattock, which was just starting on its journey.

Seven passengers in the former and 12 in the latter complained of being injured, as well as the driver and guard of the two trains.

The collision was caused by the driver of the Caledonian Company's train having started from the bay while the starting signal was at danger. The driver of the Glasgow and South-Western Company's train, on seeing the signalman waving a red flag, at once applied the vacuum-brake and reversed his engine, thereby reducing his speed from about 17 miles an hour to about 7 miles an hour on collision. The Inspecting Officer stated that as the train was running up a rising gradient of 1 in 90, the behaviour of the brake was not as good as it ought to have been, even supposing the distance run after its application did not exceed 50 yards.

Had the Caledonian train been supplied with a greater amount of brake-power, instead of only having the brakes applicable to the four tender wheels and to the wheels of two out of four vehicles composing the train, it is probable that the force of the collision would have been much mitigated.

It was further observed in the report that it is a mistake to allow drivers to draw along a platform line to a starting signal at danger under the expectation of its being lowered before it is reached, and that it was not the first time that a collision had ensued in consequence.

NORTH BRITISH :

October 15th.—A passenger train from Newcastle for Riccarton came into collision at Wark station (engine with engine) with a portion of a goods train from Glasgow for Newcastle.

There were only seven passengers in the train, and of these, five, one of whom had both legs broken, are returned as having been injured.

The Westinghouse automatic brake was fitted to the wheels of all five vehicles of the passenger train, and a steam-brake to the four coupled wheels of the engine, for which there was also the usual hand-brake.

This collision was primarily caused by the action of the signal porter at Wark station, who, overcome by the persuasion of the guard of the goods train, opened the siding-points leading on to the main line to allow the goods engine with four waggons attached to it to proceed along the single line towards Hexham, within two or three minutes of the time of the passenger train from Hexham being due, in order to attach some cattle waggons which were standing on the loop line. Owing to a curve and cutting, the view from the engine of an approaching down train is very limited.

The driver of the passenger train found the Wark down distant-signal at danger as he approached and passed it. He had shut off steam near the top of the falling gradient, and was running at a speed of 12 or 15 miles an hour, when, on rounding the last curve before reaching Wark station, he caught sight of the goods engine some 50 or 60 yards off. He at once applied both the steam-brake to the engine and the Westinghouse brake to the vehicles with full pressure, his fireman reversing and putting on steam, but was still running at a speed of 8 or 10 miles an hour, when the engines came into collision; the goods engine, being still in forward motion. He was to blame for not approaching Wark station more cautiously. He had been on duty for 11½ hours when the collision occurred.

The guard of the goods train was also to blame for persuading the signal-porter to allow the goods engine to shunt out on to the single line only five minutes before the passenger train was due. He had been on duty rather more than 10 hours when the collision took place.

The signal-porter had come on duty at 6 p.m. on the 14th ultimo for 12 hours, but had, of his own accord, remained till after the passing of the goods train.

This collision would probably have been prevented had the points and signals at Wark been interlocked, and had the line been worked on the absolute block-system.

H.—Accidents or Collisions at Level Crossings of two Railways.

No accident or collision under this class formed the subject of inquiry.

I.—Accidents in consequence of Engines or Trains being wrongly turned into Sidings or otherwise through Facing-Points.

Under this head there were four accidents, causing injuries to five passengers.

One of them was due to the signalman having apparently moved the points before the train had cleared them; one by the yard foreman having pulled over the wrong lever; one by the porter having forgot to alter the points.

One was caused by a passenger train being wrongly turned through a slip crossing.

In one case, had the points and signals been interlocked, the accident could not have happened.

GREAT WESTERN:

June 5th.—The trailing wheels of the engine-tender attached to a passenger train from Barton for Barrs Court left the rails when a passenger coach was being shunted into a siding at Barton station.

No persons were injured.

The accident was caused by the yard foreman doing the pointsman's work, and pulling the wrong lever. He had been on duty about 4½ hours when the accident happened.

It was suggested that the stop blocks on the sidings should be replaced with safety points worked from the cabin, that proper disc signals should be attached or worked in connexion with the points, and that the whole should be interlocked.

June 21st.—The hind wheels of a brake-carriage, the last vehicle in a passenger train from Birmingham, were pulled through at the wrong side of the points, where two sidings join, at Fernhill Heath station, and the carriage got across two lines of rails.

No persons were injured.

The accident was caused by the junior porter forgetting to alter the points before the passenger train was backed into the siding. He had been on duty about four hours. The booking porter should have seen that the points were right before he signalled the passenger train back. He had been on duty about 3½ hours. It was remarked that no passenger train should be run through points in goods sidings that are not interlocked unless an experienced man is holding the point lever and gives a signal to show that the points are in the right position before the train moves towards them.

LONDON AND NORTH-WESTERN:

December 3rd.—The two last coaches of an excursion train, when returning from Longsight to Llandudno, were pushed off the rails when the train was being backed into a siding at Colwyn Bay to allow the Irish mail to pass.

No persons were injured.

From the evidence, and from a close examination of the locality, there appeared to be no doubt that the van at the

tail of the excursion train was pushed back along the main down line, that the coach next to it was pushed back along the siding junction line, and that when the distance between these vehicles became such that the couplings would extend no further, the van was pushed across the up and down main lines, and the two last wheels of the coach next to it were pulled towards it on to the ballast.

This was caused either by the signalman moving the points after the train had commenced to move back, or by the excursion train having come to a stand at Colwyn Bay station, before the van at the tail had passed over these points. The signalman is to blame for his neglect in not waiting for an acknowledgment to his gong signals before sending the train back.

He had been on duty about 7½ hours when the accident occurred.

SOUTH-EASTERN:

December 17th.—The rear part of an up passenger train from Sevenoaks, on its way to No. 2 high level platform at London Bridge Station, came into collision with a pilot engine intended to proceed towards the London Bridge low-level station, but which had been by mistake turned through a slip-crossing, and was thus enabled to foul the line on which the passenger train was running.

Five passengers have complained of injury.

The collision was caused by a misunderstanding between the signalmen in the two cabins, and the shunter in charge of the pilot engine. The two signalmen, both experienced men, had been on duty about 4½ hours when the collision occurred.

The shunter had been on duty about 9½ hours at the time of the collision.

The Inspecting Officer reported that the scheme of interlocking as between the cabins and an adjacent cabin in the Brighton Company's yard required to be carefully examined to see if it might not be possible to make such alterations in connexion with the interlocking of some of the points as would tend both to safety and to the convenience of working.

J.—Accidents on Inclines.

Under this head there were four accidents or collisions, by which no less than 80 passengers were killed and 376 passengers and seven servants were injured.

The immediate cause of one of these accidents, the most serious of any on record in this country, was due to the want of brake-power in the rear brake carriage of the portion of a train standing on a steep rising gradient, but the accident would not have occurred had the train been fitted with the automatic continuous brake; one was attributed to the signalman suddenly stopping a passenger train, by which a banking engine came into collision with the rear of the train; one, a serious case, was caused by too high speed of an express train on a curve at the foot of steep falling gradients; and one was attributed to the driver allowing his train to descend a very steep gradient at too great a speed.

GREAT NORTHERN OF IRELAND:

June 12th.—In this case a heavily laden excursion train of Sunday school children and others failed quite to reach the top of the rising gradients of 1 in 82 and 1 in 75 which commence about a quarter of a mile from the buffer-stops at

the end of the platform of the Newry and Armagh station at Armagh and extend for rather more than three miles. The train was thereupon divided between the fifth and sixth vehicles from the engine to enable it to be taken on in two portions, but the rear 10 vehicles, having been inadequately secured, ran back towards Armagh, and met, at a high

rate of speed, about $1\frac{1}{2}$ miles from the spot from which they had commenced to move backwards, an ordinary passenger train from Armagh, the driver of which, having caught sight of the runaway vehicles coming back, had reduced the speed of his train from 20 or 30 miles an hour to about three to five miles an hour when the collision took place.

Up to the time of the report no less than 78 deaths of passengers (of whom 22 were 15 years of age and under) in the excursion train had taken place, and in addition to these 260 passengers (of whom about one-third were 15 years old and under) were returned as having been more or less severely injured.

Two passengers (of whom there were 14) in the ordinary train complained of slight injury.

The rear guard of the excursion train and the fireman of the ordinary train were injured.

The immediate cause of this disastrous occurrence was the want of the application of sufficient brake-power to hold the rear portion of the excursion train when slightly bumped by the front portion of the train, which had been separated from the rear portion, and which the driver had to set back previous to starting. The guard should have been left in charge of the brake-handle, so as to have prevented its being meddled with by any of the passengers who had been, by a grave error, allowed to ride in the brake-van.

The collision would in all probability have been prevented had the excursion train been fitted with an automatic continuous brake instead of with only a non-automatic continuous brake. In the former case, on the dividing of the train taking place, the brake would have remained on, or had it been previously taken off, would have been at once applied to the rear vehicles, and these would have remained immovable, notwithstanding any possible bump they might have received from the front of the train when the driver was setting back in order to make a start.

Had the block telegraph system been in operation on the line between Armagh and Hamilton's Baron, it would no doubt have mitigated the fatality attending this collision, for then the ordinary train would have been standing at Armagh station, and the runaway vehicles would have lost some of the acquired speed in running down the less steep gradients and still more in running over the 400 yards of level before reaching the ordinary train; or, supposing the signalman to have acted with judgment, and to have left the facing points in their normal position so that the runaway vehicles would have been turned into the goods yard, they would have had an additional 165 yards of level to run before reaching the buffer-stops at the end of the sidings, and have thus had their speed still further diminished.

It was observed in the report of the inquiry that the running of such heavily-laden excursion trains on lines with bad gradients was a practice much to be deprecated, and that it would be far better to limit such trains to about 10 vehicles. Further, that it would seem desirable that wooden sprags should form part of the equipment of the vans of all passenger trains in the same way as they do now of the vans of goods and mineral trains.

LONDON, CHATHAM, AND DOVER :

March 18th.—As an empty train which had formed a passenger train from the Crystal Palace to Snow Hill was standing at the platform at the latter station, it was run into at the rear by a passenger train from Victoria for Hendon. The force of the collision drove the empty train forward about four coach lengths.

Complaints of injury were received from 12 passengers, but it was stated that none of the cases were serious; the guard of the Hendon train was shaken.

The collision was attributed to the driver of the Hendon train not having stopped at the Ludgate Hill down advanced-signal until that signal and the middle arm on the Snow Hill down distant-signal post were lowered for him to proceed into Snow Hill station. Instead of which he allowed his train to descend the incline of 1 in 43 at so fast a speed that he was unable to stop at the Snow Hill down home-signals, which were all at danger, his engine striking the rear vehicle of the empty train which was standing 15 yards inside those signals with such force that that vehicle was completely broken up. The evidence of the driver, fireman, and guard was that the Ludgate Hill down advanced-signal and the Snow Hill down distant-signal were off when the Hendon train passed them; but it was mechanically impossible for the signalman to have turned them off under the electric interlocking arrangements.

The immunity from collision in descending this incline speaks very highly for the great care which must have been exercised by those concerned in working the trains, and is no doubt partly to be attributed to the very complete interlocking arrangements, both mechanical and electrical, in force between the Ludgate Hill and Snow Hill stations.

Had the Hendon train been fitted with continuous brakes the collision might have been altogether avoided.

The directors of the London, Chatham, and Dover Railway Company have, it is said, decided to fit the whole of their stock with continuous brakes.

LONDON AND NORTH-WESTERN :

February 1st.—A down express train having started from Euston station was run into by a banking engine which was following to assist it up the incline. This slight collision was caused by a mistake of the signalman, who evidently threw up the down advanced starting-signal in front of the train, instead of the starting-signal from another platform line which he intended to put to danger.

Three passengers and the rear guard were returned as being slightly injured.

The signalman had been on duty about $3\frac{1}{2}$ hours.

The accident, although due to the mistake of the signalman, was the consequence of the practice of pursuing trains with banking engines, which has always been discouraged by the Board of Trade. The practice has for many years been in force with certain trains every day at Euston station, and the same two drivers have for about 15 years been employed on the duty, and the present is only the second mishap which has been recorded.

It was, however, suggested in the report that the practice should be abandoned, for however careful the drivers of the banking engines may be, there is always a certain amount of risk in case of any sudden stoppage of the train, either by signal, as in this case, or from an accident or a break-down.

NORTH-EASTERN :

August 19th.—As the 2 p.m. express passenger train from Liverpool for Newcastle *via* Sunderland, due to leave Leeds at 4.30 p.m., and to pass Ryhope station about 6.48 p.m., was running rapidly round a sharp curve which commences close to the Sunderland end of Ryhope station, the whole of the train left the rails; the engine, tender, and third, fourth, fifth, and sixth vehicles out of the seven composing the train, being thrown on their sides, and the two leading vehicles more or less destroyed.

Complaints of injury were received from no less than 101 passengers, and in 10 cases the injuries were known to be of a serious character. The driver, fireman, and front guard of the train also sustained severe injuries.

There appeared to be no other reasonable cause to assign for this very serious accident to the express train than that it was running at too high a rate of speed when it entered the sharp curve of about $11\frac{1}{2}$ chains radius which occurs at the foot of the steep falling gradients extending for about $2\frac{1}{2}$ miles to the southward of Ryhope station.

The mark of a wheel along the inside of the top of the check rail round the low rail of the curve was first visible 17 yards from the commencement of the curve, and continued with slight intervals for about 85 yards, the mark of a wheel outside the high rail of the curve being 75 yards from the first mark on the check rail, or 10 yards before the mark on the top of the check rail ceased. It was difficult to say whether the mark on the top of the check rail was or was not that of an engine wheel; but the first mark outside the high rail was no doubt that of one of the engine wheels (probably the right driving wheel) as almost immediately after the down line began to be broken up.

It was most injudicious of the driver to allow his train to enter upon a falling gradient of 1 in 39 succeeded by another of 1 in 44, at a speed according to his own acknowledgment of 40 miles an hour and perhaps more, and then to take no means to check this speed for more than a mile, in running which distance it must have been considerably increased; and it is no wonder that, owing to the slippery condition of the rails from the rain, and to the sand in the bottom of the sand-pipes getting wet, and therefore not running, he was unable at such a high rate of speed and on so severe a gradient, to reduce the speed to a safe amount before entering the curve, when, judging from the results of the accident, the speed must have been at least 40 miles an hour, a speed greatly in excess of that suited to so sharp a curve.

More blame would have been attributed to the driver for running down the steep gradients commencing at Seaton Bank head at so high a rate of speed as he himself acknowledges to have done, had there been any instructions issued to drivers with regard to speed upon this bank and round the sharp curve at the bottom of it. A speed of 25 miles an hour down the bank for passenger trains with continuous brakes, and of 15 miles an hour round the curve could not in the opinion of the Inspecting Officer be safely exceeded, and it was, he thought, a grave omission when the running of express trains was commenced on the line between Stockton and Sunderland not to have issued instructions to the drivers of these trains to

warn them not to exceed very moderate rates of speed in descending the Seaton Bank, and in running round the sharp curve at the foot of it.

The driver had been on duty about 10½ hours when the accident occurred, and would have completed his day's work (which consisted of a trip from Newcastle to Leeds and back) in about another half-hour.

The opinion was expressed that as express trains are being run between Leeds and Sunderland, it is most desirable that the sharp curve on which this accident took place (as well as others at Haswell and Murton) should be improved.

L.—Miscellaneous.

CALEDONIAN:

February 19th.—As an up mail train from Perth for Carlisle was travelling between Beattock and Rookcliffe on the Caledonian Railway, a female passenger travelling in the middle compartment of a composite carriage, the fifth from the engine, feeling unwell, stood up and put her head out of the window, and, while in that position, near Beattock station, was struck on the head by a pouch containing letter bags hanging from a standard at the side of the line, and was apparently struck by another pouch at a point a mile south of Ecclefechan. In both cases the pouches were knocked off, and the deceased, who afterwards died from the blows received, actually remained standing with her head out of the window, apparently in a senseless condition, until the train was stopped by a person pulling the communication cord, it having in the meantime run a distance of over 22 miles.

The Board of Trade have been in communication with the General Post Office with regard to the hanging of the pouches.

MIDLAND GREAT WESTERN:

June 14th.—A harvestman, named Michael Waldron, an intending passenger from Ballyhaunis to England, who had an old varicose ulcer on his left leg, had the ulcer wounded just after making his way into a crowded compartment of a special harvestmen's train at Ballyhaunis, and died from hæmorrhage from the wound shortly after being extricated from the carriage.

Arrangements had been made for the despatch of four special trains, two from Ballina, one from Westport, and one from Claremorris, capable of holding about 3,000 persons. When the first special train from Ballina arrived at Ballyhaunis, at which no less than 898 persons had been already booked in the course of the morning, it was quite full, as the station-master had been informed by telegraph, and as he had endeavoured to explain to the harvestmen on the platform. There was, however, a rush made upon the carriages as the train drew up, and a number of harvestmen managed to find room for themselves. In the compartment into which the deceased, his brother, and another man had made their way there were already from 32 to 40 men instead of 28 for which it was intended. Judging from the experience of previous years, it was not unreasonable to suppose that the trains provided would have been sufficient, but the event proved the contrary.

April 12th.—A fatal accident to a harvestman had also previously occurred at this station, which appears to have been due to the deceased having made a rush at a carriage

door as the special train, by which he wished to travel, was drawing up at the station; in doing so he fell upon the line, and was run over by the wheels of the following carriage, had his thigh broken, and died shortly afterwards. On this occasion there were only 125 harvestmen waiting to go by the train, in which there was ample room for all.

It was suggested that, on future occasions when a large influx of harvestmen is expected, one train might be started from Foxford and another from Ballyhaunis, at which two stations they seem to congregate in the largest numbers.

The complaints which had been made as to the insufficiency of the platform and waiting-shed accommodation did not appear to be well founded, the accommodation being in excess of that usually provided at country stations, though, in view of the numbers occasionally using the station, some additional shelter on the platform would no doubt be useful.

SOUTH-EASTERN:

March 19th.—As an express passenger train from Brighton for London was passing through Redhill junction station, where it was not timed to stop, a carriage lifter, named Jesse Tayler, riding on a front platform of a Pullman car (which he was accompanying to watch if its axles ran hot), while looking back and incautiously leaning too far over the gate on the left-hand side of the platform of the car to enable him to get a view of one of the axles, struck his head against one or more of the cast-iron columns which support the platform roof on the up side of the station. He died about 2½ hours after the accident. He had travelled 16 times from Brighton to London on similar duty within three months prior to the accident, and had been cautioned several times about the closeness of the columns at Redhill station.

The Redhill station has existed in its present form since the year 1857, and, no doubt, at that time, when narrower carriages than those now in use were employed, there was sufficient clearance between the columns supporting the platform roofs and the sides of the carriages. The requirement of the Board of Trade now is that there should be a space of not less than 2 ft. 4 ins. between any standing work and the sides of the widest carriage in use on the line. At the present time the side of the columns are about 8 inches closer to the rails than they should be. It was stated that the South-Eastern directors had decided to take some steps to prevent a recurrence of a similar accident.

The following is a SUMMARY of the circumstances which contributed to the accidents in the year 1889 in comparison with the ten preceding years.

Circumstances which contributed to the Accidents or Collisions.*	Nos. of Cases.										
	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.
Fracture or unloosening of couplings - - - - -	2	3	5	4	2	1	—	2	—	—	1
Defective maintenance of rolling-stock - - - - -	7	4	3	1	2	4	1	5	1	5	6
Defective maintenance of road or works - - - - -	8	18	20	4	8	10	2	—	5	6	8
Defective construction of rolling-stock - - - - -	2	3	—	8	6	2	—	2	1	1	2
Defective construction of road or works - - - - -	9	5	6	6	5	13	7	1	4	5	6
Insufficient or defective accommodation for the requirements of the traffic - - - - -	5	1	1	4	10	4	1	—	1	2	2
Insufficient establishment, long hours, or inexperienced servants - - - - -	1	1	—	—	—	—	1	—	3	4	7
Inadequate or unsuitable brake power - - - - -	23	47	28	22	27	27	13	16	14	4	7
Defective arrangement of signals or points, or want of or defective locking-apparatus, or want of safety-points or locking-bars or bolts - - - - -	21	20	21	15	10	5	8	3	11	9	8
Insufficient or inadequately enforced regulations - - - - -	9	4	1	10	7	—	1	—	1	2	—
Defective system for securing intervals between trains, or want of telegraph-communication or of block-system - - - - -	14	9	11	12	13	10	3	7	4	8	7
Negligence, want of care, or mistakes of officers or servants - - - - -	80	96	77	91	81	70	41	50	45	45	51
Excessive speed, having regard to engine, road, or other circumstances - - - - -	14	20	12	22	30	25	7	4	7	5	8
Foggy or stormy weather, or snowstorms - - - - -	14	11	14	11	11	1	2	6	7	6	1
Totals - - - - -	209	242	199	210	212	172	88	96	104	102	113

* The above summary of the circumstances which were the cause of or contributed to the accidents and collisions inquired into for the years 1879 to 1889, shows an excess over the number of the accidents and collisions, inasmuch as a large number of these arose from more than one circumstance.

It appears that of the 69 investigated train accidents, the largest number occurred on the following railways; viz.:—

	Length of Railway. Miles at Dec. 1889.	Train Mileage.
11 on the London and North-Western - - -	1,876	40,543,888
10 on the Great Western - - - - -	2,474	33,046,892
5 on the Midland - - - - -	1,375	37,638,022
4 on the Great Eastern - - - - -	1,100	16,360,961
4 on the South-Eastern - - - - -	393	7,222,604
3 on the London, Chatham, and Dover - -	184	4,412,213
3 on the North-Eastern - - - - -	1,599	25,360,992
3 on the London and South-Western - -	814	12,397,399
3 on the Caledonian - - - - -	871	12,930,189
2 on the Manchester, Sheffield, & Lincolnshire	314	7,714,637
2 on the Glasgow and South-Western - -	347	5,330,337
2 on the Great North of Scotland - - -	316	1,749,609
2 on the Highland - - - - -	418	1,714,552
2 on the Lancashire and Yorkshire - - -	522	15,535,741
2 on the North British - - - - -	1,046	13,720,598

Of the remaining 11 accidents not more than one occurred on any one railway.

ACCIDENTS GENERALLY TO SERVANTS OF RAILWAY COMPANIES.*

19 railway servants were killed and 295 injured whilst employed in coupling and uncoupling of vehicles; 108 were killed and 1,226 injured whilst employed in various shunting operations; 15 were killed and 98 injured by being caught between vehicles; 6 were killed and 56 injured by falling between the train and platform; 60 were killed and 102 injured whilst working on the permanent way and sidings; and 120 were killed and 188 injured whilst walking, crossing, or standing on the line on duty.

The following is a comparative statement relating to the number of servants killed and injured whilst employed in shunting operations, including the coupling and uncoupling of vehicles, for the years 1880 to 1889 inclusive, during which period of ten years more than 2,000 miles of additional railway have been opened, and the number of servants employed has largely increased.

Year.	In Coupling and Uncoupling operations only.		In shunting operations including Coupling and Uncoupling Vehicles.	
	Killed.	Injured.	Killed.	Injured.
1880 - - - -	40	298	127	1,141
1881 - - - -	35	377	125	1,339
1882 - - - -	34	429	121	1,556
1883 - - - -	45	395	130	1,449
1884 - - - -	29	341	91	1,320
1885 - - - -	36	267	138	1,236
1886 - - - -	23	301	119	1,168
1887 - - - -	26	232	115	1,152
1888 - - - -	15	258	99	1,261
1889 - - - -	19	295	127	1,521

In the table following will be found the number of servants of railway companies killed and injured by train accidents and whilst engaged in their several occupations in the respective years 1874 to 1889, and the proportion of the whole number killed and

* The Returns made by the Railway Companies show that 63 persons were killed and 6,145 injured whilst on the premises or employed in the workshops or warehouses or in loading goods in the goods yards. As, however, these casualties cannot properly be considered to have occurred in the course of working the railways, the figures have been omitted.

of the whole number injured to the total number employed, calculated upon the numbers employed given in the returns presented to Parliament for the years 1874 and 1884.

Year.	By Train Accidents.		By Accidents on Railways, exclusive of Train Accidents.		Proportion of Accidents occurring to Servants of Companies by Train and other Accidents to the whole number employed, on the assumption mentioned below.*		Total Numbers employed. The Figures in Italics are Estimated.
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	
1874 -	46	271	742	2,544	1 in 320	1 in 89	250,000
1875 -	21	239	744	3,379	1 in 33½	1 in 70	255,000
1876 -	28	236	645	2,364	1 in 386	1 in 100	260,000
1877 -	22	154	620	2,009	1 in 414	1 in 123	265,000
1878 -	15	156	529	1,847	1 in 500	1 in 135	270,000
1879 -	8	118	444	1,836	1 in 619	1 in 143	280,000
1880 -	23	118	523	1,962	1 in 531	1 in 139	290,000
1881 -	19	168	502	2,278	1 in 576	1 in 123	300,000
1882 -	21	153	532	2,423	1 in 570	1 in 122	315,000
1883 -	11	87	543	2,373	1 in 596	1 in 134	330,000
1884 -	23	115	523	2,204	1 in 634	1 in 149	346,426
1885 -	13	81	438	2,036	1 in 768	1 in 163	346,426
1886 -	4	81	421	1,929	1 in 815	1 in 172	346,426
1887 -	8	109	414	1,966	1 in 821	1 in 167	346,426
1888 -	7	93	389	2,100	1 in 874	1 in 157	346,426
1889 -	4	117	431	2,652	1 in 796	1 in 125	346,426

* The numbers employed are known accurately only for the years 1874 and 1884. The figures printed in *italics* are estimated for the years 1875 to 1883. Those for the years since 1884 are calculated upon the numbers given in that year.

The table shows that although there has been an increase in the number of servants killed and injured in the past year over the previous three or four years, yet upon the whole there has been a considerable decrease during the years 1874 to 1889 in the proportion killed and injured to the number employed; and that, too, notwithstanding the large increase in the length of line and the enormous growth of the traffic.

The following table shows the number of men employed by the companies in various occupations and the number of fatal accidents and injuries to each class.

Class of Servants,	Number employed.†	Number killed and injured during the Year 1889.		Proportion to the Number Employed.	
		Killed.	Injured.	Killed.	Injured.
Station-masters - - - -	6,165	2	14	1 in 3,082	1 in 440
Brakemen and goods-guards - - -	7,407	51	427	1 in 440	1 in 17
Permanent-way men - - - -	37,840	91	104	1 in 415	1 in 364
Gatekeepers - - - -	1,605	6	3	1 in 267	1 in 234
Engine-drivers - - - -	12,874	19	258	1 in 677	1 in 49
Porters - - - -	41,809	61	443	1 in 685	1 in 94
Shunters - - - -	6,261	31	355	1 in 202	1 in 18
Firemen - - - -	12,795	28	335	1 in 456	1 in 38
Inspectors - - - -	3,518	1	21	1 in 3,508	1 in 167
Guards, passenger - - - -	5,902	6	121	1 in 967	1 in 49
Pointsmen and signalmen - - -	19,012	11	38	1 in 1,728	1 in 500
Labourers - - - -	70,405	34	121	1 in 2,076	1 in 581
Ticket collectors, &c. - - -	2,050	—	2	—	1 in 1,030
Mechanics - - - -	55,940	6	19	1 in 9,323	1 in 2,944
Other classes - - - -	62,833	88	508	1 in 714	1 in 123
Total employed in the traffic, locomotive, &c., and engineer's and storekeeper's departments - - -	346,426	435	2,769	1 in 796	1 in 125

† These figures are taken from the return for the year 1884, which shows the number of men employed on the 31st March of that year.

ACCIDENTS TO PERSONS OTHER THAN PASSENGERS OR SERVANTS OF RAILWAY COMPANIES.

The accidents to persons passing over railways at level crossings show a considerable increase, the numbers being 72 killed and 42 injured, against 53 killed and 24 injured in 1888. The number of trespassers were 267 killed and 122 injured, against 230 killed and 114 injured in 1888, or an increase of 37 in the number killed, and 8 in the number injured. The number of suicides were 84, against 65 in 1888.

ABSOLUTE BLOCK AND INTERLOCKING SYSTEMS.

The amount of progress that has been made in the adoption of these systems is stated in the Returns annually presented to Parliament.

The proportion in which the signal and point levers had been interlocked on railways was 94 per cent. in England, 83 per cent. in Scotland, 60 per cent. in Ireland, and 91 per cent. for the United Kingdom, the last figure showing an increase of 1 per cent. during the year. The interlocking on some railways in England is still incomplete, but there has been an increase of 5 per cent.; in Scotland 1 per cent.; and in Ireland 1 per cent.

The Block System has been largely extended since 1873, when 6,217 miles out of 16,082 miles of double and single line then open were worked on that system. At the end of 1889 this system had been adopted on 15,091 miles out of 18,944 miles open for traffic. The progress made in England, Scotland, and Ireland is as follows:—

In England and Wales, at the end of 1889, out of 13,305 miles of double and single lines open, 12,403 miles were worked upon the block system. In Scotland, out of 2,861 miles of double and single lines open, 2,004 miles were so worked. In Ireland, out of 2,777 miles of double and single lines open, 684 miles were so worked.

The proportion of double and single lines now worked on the block system, including the train tablet and the electric staff, is 85 per cent. in England, 70 per cent. in Scotland, and 24 per cent. in Ireland.

The proportion of double lines, apart from single lines, worked on the block system, is 98 per cent. in England and Wales, 100 per cent. in Scotland, and 35 per cent. in Ireland; the total for the United Kingdom being 94 per cent.

With regard to single line working, the train staff system with tickets has in recent years been required to be used in conjunction with the absolute block system, and the length so worked amounts to 3,859 miles; a length of 596 miles is, however, at present worked on the absolute block without the train staff.

815 miles are worked on the single engine system, and 101 miles on train staff system without tickets, systems approved by the Board of Trade.

Besides the above, 74 miles are worked by permissive block; and 115 miles by train staff and electric telegraph combined.

The passing of the Act of 1889 will doubtless lead to an acceleration of progress in absolute block working and interlocking.

LEVEL CROSSINGS.

As in previous years, attention was directed during the year to the question of level crossings. In the majority of the cases which came under the notice of the Department, either through the occurrence of accidents or by complaints from local authorities and individuals, the Board of Trade had no statutory authority to compel the railway companies to make better provision for the safety of the public. In every case, however, in which complaint was made, or whenever a coroner's jury made a recommendation on the subject, the Board of Trade communicated with the company concerned. Satisfactory arrangements were made with respect to public road level crossings in several instances. At seven footpath and occupation crossings, and at five station crossings, the companies interested promised to construct footbridges or subways.

CONTINUOUS BRAKES.

The continuous brakes return laid before Parliament for the half-year ended 31st December 1889, shows that the number of vehicles fitted with brakes complying with some or all of the conditions laid down in the circular of this department amounted, at that date, to 80 per cent. of the number in use, and that the number of vehicles fitted with pipes and connexions only, amounted to another 14 per cent.

GENERAL REMARKS.

It is with great regret that I refer to the occurrence in the past year of the calamitous and lamentable accident which took place near Armagh on the Great Northern Railway of Ireland, in which a large number of passengers were killed and injured. The causes which led to this accident are set out at pages 18 and 19. It is earnestly to be hoped that the Company will, without loss of time, adopt a brake fulfilling the requirements of the Board of Trade, and not open to the serious objections which contributed to this disaster.

The accident at Ryhope on the North-Eastern Railway, attended with serious injuries to a large number of passengers, that at Longsight, near Manchester, on the London and North-Western Railway, in which several passengers were killed and a large number injured, that at Cheetham Hill junction, on the Lancashire and Yorkshire Railway, in which also a large number of passengers were injured, serve to show that very slight causes may lead to most serious accidents, and the necessity for careful attention to the rules adopted for working the trains, and for the adoption of all improvements for safe working which experience can devise.

After the serious accident to an excursion train from the breaking of an axle of the engine, which occurred near Penistone, on the Manchester, Sheffield, and Lincolnshire Railway, referred to at pages 8 and 9, the Board of Trade deemed it desirable to bring the recommendations of the Inspecting Officer relative to the inspection of such axles under the consideration of the Railway Companies Association. The correspondence in this matter is given in Appendix 3.

Several accidents have occurred from trains entering terminal stations at too great speed and coming into collision with the buffer-stops, or with empty vehicles standing in the bays. It is probable that many of these buffer-stop accidents would be prevented if the rule for entering terminal stations were that the continuous brake was never to be used except on an emergency, and not merely that the speed is to be such that the train can be stopped by the use of the hand-brakes only.

With regard to the fatal accident to a female passenger on the Caledonian Railway, whose head was struck by a pouch containing letter bags hanging from a standard at the side of the line, the Board of Trade have been in communication with the General Post Office, with a view to the modification of the arrangements in force. Up to the present, however, that Department have not been able to make any change in the present system. The matter is still the subject of correspondence.

I regret also to have to refer to the number of instances in which servants of the Companies, performing duties connected with the trains to which accidents occurred, had been at the time of the accident on duty for a large number of hours.

I have the honour to be, Sir,

Your obedient Servant,

Railway Department,
Board of Trade,
August 1890.

COURTENAY BOYLE.

APPENDIX No. 1.

ABSTRACT of the ACCIDENTS which have been reported upon by the Inspecting Officers of the Department during the year 1889.—Classified according to the Class of each Accident, and the Causes to which it may be attributed.

CLASS OF ACCIDENT AND NAME OF RAILWAY.	Number of Accidents.	SUFFERERS BY ACCIDENT.				CAUSES OF ACCIDENT.													
		Pas- sengers and others.		Servants of Company.		Fracture or unloosening of Couplings.	Attributable to the Rolling Stock or the Works.		Attributable to the Management.										
							Defective Maintenance of Machinery of Train.	Defective Construction of Road or Works.	Defective Accommodation for the Requirements of the Train.	Insufficient Establishment of Servants, or too long Hours of Duty.	Insufficient Brake Power.	Want of Communication Guard and Engine-driver.	Defective Arrangements of Signals or Points, or Want of or defective Locking Apparatus, or Want of Safety Points, or Locking Bars or Bolts.	Want of Time-pieces.	Insufficient or inadequately enforced Regulations.	Defective System for securing Interlocking of Signals, or Want of Telegraph Communication, or of Block Telegraph System.	Negligence, Want of Care or Mistake of Officers and Servants.	Excessive Speed, having regard to Road, or other Circumstances.	Foggy Weather, or Snow.
CLASS OF ACCIDENT.		Killed.	Injured.	Killed.	Injured.														
A.—Accidents from Engines or Vehicles meeting with or leaving the Rails in consequence of Obstructions or of Defects in connexion with the Permanent-way or Works	11	-	77	-	-	-	1	7	1	6	-	-	-	-	-	-	2	5	-
B.—Accidents from Boiler-explosions, or from Failures of Axles, Wheels, or Tyres, or from other defects in rolling-stock	6	1	72	-	1	-	4	-	2	-	-	-	-	-	-	-	1	-	-
C.—Accidents from Trains entering Stations at too great Speed	12	-	81	-	4	-	-	-	-	1	1	2	-	1	-	-	12	-	-
D.—Collisions between Engines and Trains following one another on the same Line of Rails, excepting at Junctions, Stations, or Sidings	1	-	13	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E.—Collisions at Junctions	4	-	88	1	6	1	1	-	-	-	-	-	-	-	-	1	4	-	-
F.—Collisions at Stations or Sidings	25	7	143	1	20	-	-	-	-	1	4	2	-	5	-	4	23	1	1
G.—Collisions between Engines or Trains meeting in opposite Directions	2	-	24	-	-	-	-	-	-	-	1	1	-	1	-	1	2	-	-
H.—Collisions at Level-Crossings of two Railways	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
I.—Accidents in consequence of Engines or Trains being wrongly turned into Sidings or otherwise through Facing-Points	4	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J.—Accidents on Inclines	4	80	376	-	7	-	-	-	-	1	2	-	-	-	-	1	4	2	-
K.—Train on Fire	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
L.—Miscellaneous	3*	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	72	80	879	3	39	1	6	8	2	6	2	7	7	8	-	7	51	8	1
NAME OF RAILWAY.																			
Caledonian	4	1	44	-	7	-	-	1	1	-	-	-	-	-	-	-	1	1	-
Carlisle (Central) Station	1	-	19	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-
City of Glasgow Union	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-
Dundee and Arbroath Junction	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-
Glasgow and South-Western	2	-	16	-	1	-	1	-	-	-	-	-	-	-	-	-	2	-	-
Great Eastern	4	-	44	-	3	-	-	1	2	-	-	-	-	-	-	-	2	-	-
Great Northern of Ireland	1	80	280	-	2	-	-	-	-	-	-	-	-	-	-	-	1	1	-
Great North of Scotland	2	1	27	1	3	-	-	-	-	-	1	-	-	-	-	1	1	1	-
Great Western	10	-	14	-	5	-	-	3	1	3	1	-	-	-	-	1	1	2	-
Highland	2	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	2	7	-
Lancashire and Yorkshire	2	-	64	1	6	-	-	-	-	-	-	-	-	-	-	-	2	-	-
Listowell and Ballybunion	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
London and North-Western	11	6	73	-	5	-	-	-	-	1	2	1	-	2	-	-	10	1	-
London and South-Western	3	-	11	-	-	-	-	-	-	1	-	-	-	-	-	-	2	1	-
London, Chatham, and Dover	3	-	41	-	2	-	-	-	1	-	-	-	-	-	-	-	2	-	-
Manchester, Sheffield, and Lincolnshire	2	1	67	-	1	-	1	-	-	-	-	-	-	-	-	1	1	1	-
Metropolitan	1	-	9	-	1	-	-	-	-	-	-	-	-	-	-	-	1	1	-
Midland	5	-	53	-	1	-	-	-	-	-	-	-	-	-	-	-	1	1	-
Midland Great Western	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-
Neath and Brecon	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	3	3	-
North British	2	-	18	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-
North-Eastern	3	-	116	-	3	-	-	-	-	-	-	-	-	-	-	-	1	1	-
North London	1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-
North Staffordshire	1	-	3	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
South-Eastern	5	-	14	1	-	-	-	1	-	-	-	-	-	-	-	-	3	1	-
Wrexham, Mold, and Connah's Quay	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-
TOTAL OF THE ABOVE RAILWAYS	72*	89	879	3	39	1	6	8	2	6	2	7	7	8	-	7	51	8	1

* These three were not train accidents.

APPENDIX No. 2.

of the ACCIDENTS which have been reported upon by the Inspecting Officers of the Department during the year 1889.—Classified according to the Nature of each Accident, and the Causes to which it may be attributed.

NAME OF RAILWAY				AND				DESCRIPTION OF ACCIDENT.							
SUFFERERS BY ACCIDENT.				CAUSES OF ACCIDENT.											
				Attributable to the Rolling Stock or the Works.				Attributable to the Management.							
Fracture or unloosening of Couplings.		Defective Maintenance of		Defective Construction of		Insufficient or defective Accommodation for the Requirements of the Traffic. Insufficient Establishment, inexperienced Servants, or too long Hours of Duty. Insufficient Brake Power. Want of Communication between Guard and Engine-driver. Defective Arrangements of Signals or Points, or Want of or defective Locking Apparatus, or Want of Safety Points, or Locking Bars or Bolts. Want of Time-pieces. Insufficient or inadequately enforced Regulations. Defective System for securing Intervals between Trains, or Want of Telegraphic Communication, or of Block Telegraph System. Negligence, Want of Care, or Mistake of Officers or Servants. Excessive Speed, having regard to Engine, or Road, or other Circumstances. Foggy Weather.									
		Machinery of Train.		Machinery of Train.											
Road or Works.		Road or Works.		Road or Works.											
Killed.	Injured.	Pas-sengers and others.	Servants of Company only.	Improper Interference by Persons not under the Control of the Company.											
Killed.	Injured.														

A.—Accidents from Engines or Vehicles meeting with or leaving the Rails in consequence of Obstructions or of Defects in connexion with the Permanent-Way or Works.

LEDONIAN :																			
January 21st.—Passenger train left the rails at Haughhead junction	-	39	-	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	-
WDEE AND AEDBROATH JUNCTION :																			
April 12th.—Passenger train partly left the rails at St. Vigeans junction	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	1	-	-	-
EAT EASTERN :																			
January 23th.—Engine and part of passenger train leaving the rails at Stoke Newington station	-	32	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-
EAT WESTERN :																			
April 6th.—Passenger train left the rails at Devonport junction	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-
May 8th.—Several vehicles of a passenger train left the rails at Witham	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
May 13th.—Leading wheels of the engine of a passenger train left the rails at St. Dennis junction	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-
December 18th.—Passenger train left the rails at Wivetscombe viaduct	-	-	-	-	-	-	1	-	1	-	-	-	-	1	-	-	-	-	-
TOWELL AND BALLYBUNION :																			
September 29th.—Passenger train left the line at Galey Bridge	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
NDON AND SOUTH-WESTERN :																			
December 24th.—A passenger train left the rails near Morthoe station	-	1	-	-	-	-	-	-	1	-	-	-	-	1	1	-	-	-	-
NDON, CHATHAM, AND DOVER :																			
July 1st.—Part of passenger train left the rails at Nunhead	-	4	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-
TH-EASTERN :																			
August 30th.—Part of passenger train left the rails between Battle and Roberts-bridge	-	1	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-
Total	-	77	-	-	-	-	7	1	6	-	-	-	-	2	5	-	-	1	-

NAME OF RAILWAY				DESCRIPTION OF ACCIDENT.				CAUSES OF ACCIDENT.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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B.—Accidents from Boiler-Explosions, Failures of Axles, Wheels, or Tyres, or from other Defects in the Rolling Stock.

CALEDONIAN : March 9th.—A passenger train left the rails at Marshall's station	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
GREAT EASTERN : October 15th.—Engine and next vehicle of a workmen's passenger train left the rails near Stepney station	-	7	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
MANCHESTER, SHEFFIELD, AND LINCOLNSHIRE : March 30th.—Excursion train left the rails near Penistone	1	62	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-
NEATH AND BRECON : July 13th.—Engine and two front vehicles of a passenger train left the rails between Cray and Devynock station	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
NORTH STAFFORDSHIRE : February 28th.—An express train left the rails near Harecastle	-	3	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
WREXHAM, MOLD, AND CONNAH'S QUAY : February 23rd.—Engine and horse-box of a passenger train left the rails near Wrexham	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	1	72	-	1	-	4	-	2	-	-	-	-	-	-	1	-	-	-

C.—Accidents from Trains entering Stations at too great a Speed.

GLASGOW AND SOUTH-WESTERN : July 8th.—A train came into collision with the buffer stops at Fairlie Pier station	-	16	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
GREAT WESTERN : August 2nd.—A part of a passenger train pushed back against carriages standing at buffer-stops at Plymouth	-	2	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
LANCASHIRE AND YORKSHIRE : July 7th.—A passenger train overran proper stopping place at Preston station, and came into collision with buffer-stops	-	2	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-
LONDON AND NORTH-WESTERN : March 7th.—A passenger train came into collision at Holyhead with buffer-stops	-	-	-	2	-	4	-	-	-	1	-	-	-	-	1	-	-	-
August 3rd.—A passenger train ran past the platform at Llandudno, and struck a train standing in a siding	-	3	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
September 1st.—A passenger train turned in mistake into a bay line at Crewe, and came into collision with buffer-stops	-	8	-	-	-	-	-	1	1	-	1	-	-	-	1	-	-	-
September 16th.—A passenger train ran into two wagons standing against buffer-stops at Addison Road station	-	8	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-

NAME OF RAILWAY AND DESCRIPTION OF ACCIDENT.		SUFFERERS BY ACCIDENT.		CAUSES OF ACCIDENT.															
				Attributable to the Rolling Stock or the Works.				Attributable to the Management.											
				Fracture or unloosening of Couplings.		Defective Maintenance of		Defective Construction of											
Killed.	Injured.	Pas- sengers and others.	Servants of Company only.	Machinery of Train.	Road or Works.	Machinery of Train.	Road or Works.	Insufficient or defective Accommodation for the Requirements of the Traffic.	Insufficient Establishment, inexperienced Servants, or too long Hours of Duty.	Insufficient Brake Power.	Want of Communication between Guard and Engine-driver.	Defective Arrangements of Signals or Points, or Want of or defective Locking Apparatus, or Want of Safety Points, or Locking Bars or Bolts.	Want of Time-pieces.	Insufficient or inadequately enforced Regulations.	Defective System for securing Intervals between Trains, or Want of Telegraph Communication, or of Block Telegraph System.	Negligence, Want of Care, or Mistake of Officers or Servants.	Excessive Speed, having regard to Engine or Road, or other Circumstances.	Foggy Weather.	Improper Interference by Persons not under the Control of the Company.

(C).—Accidents from Trains entering Stations at too great a Speed—continued.

METROPOLITAN:																
January 16th.—A passenger train came into collision at Moorgate Street with buffer stops																
-	9	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-
NORTH-BRITISH:																
September 24th.—A passenger train came into collision at the buffer-stops at Musselburgh																
-	13	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-
NORTH-EASTERN:																
September 7th.—A passenger train came into collision with buffer-stops at York station																
-	13	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
NORTH LONDON:																
June 26th.—A passenger train came into collision with buffer-stops at Broad Street station																
-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
NORTH-EASTERN:																
June 24th.—A passenger train came into collision with a carriage standing in a bay at the buffer-stops at Grove Park station																
-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
TOTAL	81	-	4	-	-	-	1	1	2	-	1	-	-	-	12	-

D.—Collisions between Engines and Trains following one another on the same Line of Rails, excepting at Junctions, Stations, or Sidings.

ISLELAND:																
January 3rd.—A passenger train came collision with the rear of a coal train near Lenton South junction																
-	13	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-

E.—Collisions at Junctions.

CITY OF GLASGOW UNION:																
February 15th.—Goods train run into a passenger train at Clyde junction																
-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-
GLASGOW AND SOUTH-WESTERN:																
June 20th.—A passenger train came into collision at Johnstone junction with a goods and mineral train																
-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	1	-
LANCASHIRE AND YORKSHIRE:																
December 7th.—Collision between a passenger train and a coal train at Cheat-ham Hill junction																
-	62	1	5	-	-	-	-	-	-	-	-	-	-	-	1	-
LONDON, CHATHAM, AND DOVER:																
November 14th.—Collision at St. Paul's junction																
-	25	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-
TOTAL	88	1	6	1	1	-	-	-	-	-	-	-	-	1	4	-

NAME OF RAILWAY.	AND DESCRIPTION OF ACCIDENT.	CAUSES OF ACCIDENT.															
		SUFFERERS BY ACCIDENT.				Attributable to the Rolling Stock or the Works.				Attributable to the Management.							
		Passengers and others.		Servants of Company only.		Fracture or loosening of Couplings.	Defective Maintenance of		Defective Construction of	Insufficient or defective Accommodation for the Requirements of the Traffic.	Insufficient Establishment, inexperienced Servants, or too long Hours of Duty.	Insufficient Brake Power.	Want of Communication between Guard and Engine-driver.	Defective Arrangements of Signals or Want of due care in the use of the Signalling Apparatus, or Want of Safety Points, or Locking Bars or Bolts.	Want of Time-pieces.	Insufficient or inadequately enforced Regulations.	Defective System for securing Intervals between Trains, or Want of Telegraph Communication, or of Block Telegraph System.
		Killed.	Injured.	Killed.	Injured.		Machinery of Train.	Road or Works.									

F.—Collisions within Fixed Signals at Stations or Sidings.

CALEDONIAN:																	
December 2nd.—Double collision near St. Rethers station	-	5	-	7	-	-	-	-	-	-	-	-	-	-	-	-	1
GREAT EASTERN:																	
August 9th.—Collision at the Liverpool Street Bridge signal between an empty train and a passenger train	-	2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	1
December 18th.—Collision between two passenger trains at Fordham	-	3	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
GREAT NORTH OF SCOTLAND:																	
July 25th.—Collision at Brackley station between some waggons in a siding and a mixed train	1*	7	1	1	-	-	-	-	-	1	-	-	-	1	-	-	1
November 21st.—Collision at Hunsley station between an up and a down passenger train at the loop points	-	20	-	2	-	-	-	-	-	-	-	-	-	1	-	-	1
GREAT WESTERN:																	
January 19.—Collision at the engine-shed cabin, near Cardiff, between a passenger train and a light engine standing on the line	-	6	-	4	-	-	-	-	-	-	-	-	-	-	-	-	1
March 27th.—A passenger train, when being pushed back at Barrs Court junction, came into collision with a goods train	-	1	-	1	-	-	-	-	1	-	-	-	-	-	-	-	1
HIGHLAND:																	
February 14th.—A passenger train came into collision with a pilot engine at Elgin station	-	3	-	-	-	-	-	-	-	1	1	-	-	1	-	-	1
June 17th.—Collision between a mixed train and some empty carriages at Keith	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1
LONDON AND NORTH-WESTERN:																	
June 15th.—Collision between a pilot engine and a passenger train at Wigan	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
June 29th.—Collision between a passenger train and a passenger train standing at a platform at New Street station	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
August 25th.—Collision between a passenger train with a van standing on a crossing at Welford and Kelworth station	-	2	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
August 26th.—Collision between a passenger train and an engine at Stockport	-	6	-	-	-	-	-	-	-	1	-	-	-	1	-	-	1
October 4th.—Collision between an up local passenger train and two engines and a brake-van standing on the up fast line, near Longsight station	6	37	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
LONDON AND SOUTH-WESTERN:																	
June 8th.—Collision between an up passenger train and a down goods train, when backing across the up main line at Staines	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
July 29th.—Collision between a passenger train and three empty vehicles at Eastleigh station	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MANCHESTER, SHEFFIELD, AND LINCOLNSHIRE:																	
September 1st.—Collision between a passenger train and a fish train standing at the Sheffield East signal-box	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1

* Not a passenger.

NAME OF RAILWAY AND DESCRIPTION OF ACCIDENT.	SUFFERERS BY ACCIDENT.		CAUSES OF ACCIDENT.													
			Attributable to the Rolling Stock or the Works.		Attributable to the Management.											
			Fracture or loosening of Couplings.	Defective Maintenance of Machinery of Train.	Defective Construction of Road or Works.	Defective Construction of Machinery of Train.	Defective Construction of Road or Works.	Insufficient or defective Accommodation for the Requirements of the Traffic.	Insufficient Establishment, inexperienced Servants, or too long Hours of Duty.	Insufficient Brake Power.	Want of Communication between Guard and Engine-driver.	Defective Arrangements of Signals or Points, or Want of adequate locking of points, or Want of Safety Points, or Locking Bars or Bolts.	Want of Time-pieces.	Insufficient or inadequately enforced Regulations.	Defective System for securing Intervals between Trains, or Want of Telegraph Communication, or of Block Telegraph System.	Negligence, Want of Care, or Mistake of Officers or Servants.
	Killed.	Injured.														
	Pas- sengers and others.	Servants of Company only.														

F.—Collisions within fixed Signals at Stations or Sidings—continued.

LAND:																
August 2nd.—Collision between a special goods train and the engine of a mixed train at Sheffield station	-	5	-	-	-	-	-	-	-	1	-	-	-	-	1	-
September 3rd.—Collision between eight carriages of a train and its engine at Morecambe station	-	10	-	-	-	-	-	-	-	-	-	-	-	-	1	1
September 14th.—Collision between a passenger train and an empty train at Burton	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
November 29th.—Collision between an express train and two empty carriages standing on the line at Normanton station	-	2	-	-	-	-	-	-	-	-	-	-	-	-	1	-
LAND GREAT WESTERN:																
September 30th.—Collision between a down special train of waggons with an up mixed mail train at Carrick-on-Shannon station	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-
TH-EASTERN:																
March 2nd.—Collision between two goods trains at Staddlethorpe, the engine of the one being thrown foul of the down line as an express train	-	2	-	-	-	-	-	-	-	-	-	-	-	1	1	-
TH-EASTERN:																
September 30th.—Collision between a portion of a passenger train and an unattached engine	-	5	-	-	-	-	-	-	-	-	-	-	-	-	1	-
October 15th.—Collision between two passenger trains between Stoney Street Junction and Cannon Street station	-	3	-	-	-	-	-	-	-	-	-	-	-	-	1	-
TOTAL	7	143	1	20	-	-	-	1	4	2	-	5	-	-	4	23

G.—Collisions between Engines or Trains meeting in opposite Directions.

TH BRITISH:																
October 15th.—Collision between a passenger train and a portion of a goods train at Wark station	-	5	-	-	-	-	-	-	1	-	-	1	-	-	1	1
DEL STATION, CARLISLE:																
January 21st.—Collision between two passenger trains at the Citadel station	-	19	-	-	-	-	-	-	-	1	-	-	-	-	1	-
TOTAL	-	24	-	-	-	-	-	-	1	1	-	1	-	-	1	2

H.—Collisions at Level-Crossings of two Railways.

No collisions occurred under this head.

I.—Accidents in consequence of Engines or Trains being wrongly turned into Sidings or otherwise through Facing-Points.

DON AND NORTH-WESTERN:																
December 3rd.—The two last passenger vehicles of a passenger train left the rails at Colwyn Bay	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AT WESTERN:																
June 5th.—Trailing wheels of engine of a passenger train left the rails at Barton	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
June 21st.—The hind wheels of a brake carriage of a passenger train got across two lines of rails at Fernhill Heath station	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-
December 17th.—Passenger train turned through slip points at London Bridge	-	5	-	-	-	-	-	-	-	-	-	-	-	-	1	-
TOTAL	-	5	-	-	-	-	-	-	-	-	-	1	-	-	3	-

NAME OF RAILWAY AND DESCRIPTION OF ACCIDENT.				SUFFERERS BY ACCIDENT.		CAUSES OF ACCIDENT.															
						Attributable to the Rolling Stock or the Works.								Attributable to the Management.							
						Fracture or loosening of Couplings.		Defective Maintenance of		Defective Construction of											
Killed.	Injured.	Pas-sengers and others.	Servants of Company only.	Machinery of Train.	Road or Works.	Machinery of Train.	Road or Works.	Insufficient or defective Accommodation for the Requirements of the Traffic.	Insufficient Establishment, inexperienced Servants, or too long Hours of Duty.	Insufficient Brake Power.	Want of Communication between Guard and Engine-driver.	Defective Arrangements of Signals or Points, or Want of defective Locking Apparatus, or Want of Safety Points, or Locking Bars or Bolts.	Want of Time-pieces.	Insufficient or inadequately enforced Regulations.	Defective System for securing Intervals between Trains, or Want of Telegraph Communication, or of Block Telegraph System.	Negligence, Want of Care, or Mistake of Officers or Servants.	Excessive Speed, having regard to Engine, or Road, or other Circumstances.	Foggy Weather.	Improper Interference by Persons not under the		

J.—Accidents on Inclines.

GREAT NORTHERN OF IRELAND: June 12th.—The rear portion of an excursion train ran back the incline and met a passenger train near Armagh - -	80	260	-	2	-	-	-	-	-	-	-	1	-	-	-	-	1	1	-	-	-	-
LONDON, CHATHAM, AND DOVER: March 18th.—Collision between an empty train standing at Snow Hill station and a passenger train descending the incline - -	-	12	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	1	1	-	-	-
LONDON AND NORTH-WESTERN: February 1st.—An express train from Euston station was run into by a brake engine on the incline - - -	-	3	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
NORTH-EASTERN: August 19th.—An express train left the rails at Ryhope - - -	-	101	-	3	-	-	-	-	-	-	1	-	-	-	-	-	-	1	1	-	-	-
TOTAL - - -	80	376	-	7	-	-	-	-	-	-	1	2	-	-	-	-	1	4	2	-	-	-

K.—Train on Fire.

No accidents occurred under this head.

L.—Miscellaneous.*

CALEDONIAN: February.—A female passenger in a mail train was struck on the head by a letter bag first at Beattock and again at Ecclefechan - - -	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MIDLAND GREAT WESTERN: June 14th.—A harvest man, after forcing himself into a crowded compartment of a special train, was wounded in the leg and died of hæmorrhage - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NORTH-BRITISH: March 12th.—A carriage lifter riding on the platform of a Pullman car when incautiously looking too far over the side he struck his head against a support of the platform roof at Red Hill station - -	-	+	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL - - -	*1	-	*1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* The accidents in this class were not train accidents.

APPENDIX No. 3.

COPY of CORRESPONDENCE with the Secretary of the Railway Companies Association on the subject of Axle Failures, arising out of a Recommendation contained in Major-General Hutchinson's Report of his Inquiry with reference to an accident at Penistone on the 30th March 1889.

R. 8540.

SIR, Board of Trade, 14th June 1889.
I AM directed by the Board of Trade to transmit to you for the consideration of the Railway Companies Association a copy of the report by Major-General Hutchinson, R.E., on the accident which occurred on the 30th March at Penistone on the Manchester, Sheffield, and Lincolnshire Railway, owing to the fracture of the leading axle of an engine of a passenger train.

In calling the attention of the Railway Companies Association to the last paragraph but one of the report, I am directed to state that the other Inspecting Officers concur in Major-General Hutchinson's recommendation that the question of how many miles axles should be allowed to run before being submitted to an exhaustive examination as to the existence of flaws should be settled by a conference of the locomotive superintendents of the various railways, and to ask whether arrangements can be made for a conference of locomotive superintendents for this purpose.

H. Oakley, Esq.,
Railway Companies
Association.

I am, &c.
COURTENAY BOYLE.

The Great Northern Railway,
General Manager's Office,
King's Cross Station,
London, 11th December 1889.

SIR, WITH reference to your letter of the 14th June last, calling attention to General Hutchinson's recommendation, contained in his report on an accident which occurred on the Manchester, Sheffield, and Lincolnshire Railway, owing to the fracture of the leading axle of an engine of a passenger train, and suggesting that the question of how many miles axles should be allowed to run, before being submitted to an exhaustive examination as to the existence of flaws, should be submitted to a conference of locomotive superintendents. Pursuant to that letter, which was brought before the association, and also before the boards of the principal railway companies in the country, I have to inform you that the respective locomotive superintendents of the Companies were instructed to meet and consider the best course to be pursued with reference to the suggestion made by General Hutchinson. They have had several meetings for this purpose, and have come to the resolution of which I have now the pleasure to forward you a copy.

Courtenay Boyle, Esq., C.B.,
Railway Department,
Board of Trade.

I am,
H. OAKLEY.

COPY of a RESOLUTION passed at a meeting of Locomotive Engineers, held at the Railway Clearing House, October 18th, 1889.

Resolved:—

That the Companies are alive to the necessity of frequent and careful inspection; that every axle passes under review and minute examination by experienced and skilled workmen from time to time; and that the conditions of working are so various, that it is the unanimous opinion of the locomotive engineers, from their experience, that greater security for the public safety is gained by the present system of continuous examination than could be obtained with a fixed "mileage life" as suggested by the Board of Trade.

R. 14,299.

SIR, Board of Trade, 28th December 1889.
I AM in receipt of yours of the 11th inst., with reference to the recommendation contained in General Hutchinson's report on the accident which occurred at Penistone on the 30th March last, in which you state the resolution arrived at by a conference of locomotive superintendents, with regard to a more exhaustive examination of each axle when it had reached a certain mileage. In reply I am to state that the suggestion does not seem to have been thoroughly understood. It was not suggested that a mileage life for axles should be fixed, or that an end should be put to the method of inspection now adopted by

the railway companies, but that some additional safeguard should be provided, which the numerous instances of failure in old axles seem to render necessary.

The inspecting officers suggest that after an axle has run a certain mileage, such mileage to be fixed by a conference of the locomotive superintendents, it should be subjected to a more exhaustive overhauling than the present periodical examination appears to afford, judging from cases in which the returns and drawings furnished by railway companies show the existence of long standing flaws which ought to have been detected if a careful and critical examination had been made.

In this connexion, I am to refer to an axle failure which occurred on the Glasgow and South-Western Railway on the 23rd ultimo, particulars of which are enclosed herewith in original, and I shall be glad to receive the documents again when noted.

I am, &c.

COURTENAY BOYLE.

H. Oakley, Esq.,
Great Northern Railway,
King's Cross, N.

The Great Northern Railway Co.,
General Manager's Office,
King's Cross Station,
London, 30th December 1889.

SIR, I AM in receipt of your further letter of the 28th ultimo, R. 14,299, on the subject of the examination of axles, respecting which a further meeting of locomotive superintendents shall be convened, and I will communicate with you again thereafter.

I am, &c.

H. OAKLEY.

Courtenay Boyle, Esq., C.B.,
Railway Department,
Board of Trade.

The Great Northern Railway Co.,
General Manager's Office,
King's Cross Station,
London, 13th February 1890.

SIR, WITH reference to your letter of the 28th December last, R. 14,299, informing us that, in the view of the Board of Trade, some additional safeguard should be provided, which the numerous instances of failure in old axles seemed to render necessary, and submitting a suggestion of the inspecting officers of the Board of Trade that, after an axle has run a certain mileage, it should be subjected to a more exhaustive overhauling than the present periodical examination appears to afford, I convened a further meeting of locomotive engineers of the companies, and I now have the pleasure to send you a copy of a resolution which they came to after duly considering your communication above referred to, which, I hope, will meet with the approval of the Board of Trade.

It is right that I should add that the locomotive engineers of the London and North-Western and Caledonian Railway Companies were not parties to the resolution.

I am, &c.

H. OAKLEY.

The Assistant Secretary,
(Railway Department),
Board of Trade.

COPY of a RESOLUTION passed at a Meeting of the Locomotive Engineers of the principal Railways in the Kingdom, held at the Railway Clearing House on 15th January 1890.

After very lengthy discussion it was—
Resolved:—

That reply to the Board of Trade, in answer to their communication of 28th December last, be made as follows:—

The companies are alive to the necessity of frequent and careful examination of locomotive engine axles. Every axle passes under critical examination each time the engine is in the shop for repairs; but, in addition to this, with the view of meeting the recommendation of the inspecting officers of the Board of Trade, it is agreed that when an axle has run about 250,000 miles it shall be submitted to a special examination, and at each 100,000 miles run thereafter.

RAILWAY ACCIDENTS.

RETURNS

OF

ACCIDENTS AND CASUALTIES

AS REPORTED TO THE BOARD OF TRADE BY THE SEVERAL RAILWAY COMPANIES
IN THE UNITED KINGDOM,

During the Year ending 31st December 1889,

In pursuance of the Regulation of Railways Act (1871), 34 & 35 Vict. cap. 78;

TOGETHER WITH

REPORTS OF THE INSPECTING OFFICERS OF THE
RAILWAY DEPARTMENT TO THE BOARD OF TRADE

UPON

CERTAIN ACCIDENTS

Which were inquired into.

Presented to both Houses of Parliament by Command of Her Majesty.



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1890.

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Summary of Accidents and Casualties which have been reported to the Board of Trade as having occurred upon the Railways in the United Kingdom during the Year ending 31st December 1889.

I.—ACCIDENTS TO TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c.

Accidents to trains, rolling-stock, permanent-way, &c. caused the death of 92 persons, and injury to 1,133, viz. :—

	Killed.	Injured.	Total for the corresponding Period in 1889.	
			Killed.	Injured.
Passengers	88	1,016	11	594
Servants of companies	4	117	7	93
Total	92	1,133	18	687

During the year there were reported 39 collisions between passenger trains or parts of passenger trains, by which 80 passengers and 1 servant were killed and 453 passengers and 21 servants were injured; 39 collisions between passenger trains and goods or mineral trains, &c., by which 6 passengers were killed and 129 passengers and 30 servants injured; 28 collisions between goods trains or parts of goods trains, by which 2 servants were killed and 36 injured; 44 cases of passenger trains or parts of passenger trains leaving the rails, by which 214 passengers and 6 servants were injured; 13 cases of goods trains or parts of goods trains leaving the rails, by which 2 servants were injured; 8 cases of trains or engines travelling in the wrong direction through points, by which 1 passenger was killed and 17 passengers and 3 servants were injured; 30 cases of trains running into stations or sidings at too high a speed, by which 100 passengers and 10 servants were injured; 135 cases of trains running over cattle* or other obstructions on the line, by which 4 passengers were injured; 3 cases of bursting of tubes of engines, by which 3 servants were injured; 10 failures of machinery, springs, &c. of engines, by which 3 passengers and 3 servants were injured; 239 failures of axles, by which 1 passenger and 1 servant were killed and 62 passengers and 1 servant injured; 9 failures of couplings, by which 33 passengers and 2 servants were injured; 10 fires in trains, by which 1 passenger was injured.

The following cases were also reported, but they involved no personal injury :— 44 cases of trains running through gates at level crossings; 668 failures of tyres; 2 failures of wheels; 3 failures of ropes used in working inclines; 262 failures of rails; 4 cases of the failure of bridges; 12 cases of flooding of portions of the permanent-way; 10 slips in cuttings or embankments; 8 fires at stations; and 1 other accident.

Of the 668 tyres which failed, 19 were engine-tyres, 10 were tender-tyres, 8 were carriage-tyres, 17 were van-tyres, and 614 were waggon-tyres; of the waggons, 501 belonged to owners other than the Railway Companies; 547 tyres were made of iron, and 120 of steel, and in 1 case the material was not stated; 14 of the tyres were fastened to their wheels by Mansell's patent method, 1 of which left its wheel when it failed; 18 by Gibson's patent method, 2 of which left their wheels when they failed; 3 by Beattie's patent method, 2 of which left their wheels when they failed; 609 by bolts or rivets; and 24 by other methods, 1 of which left its wheel when it failed; 47 tyres broke at rivet-holes, 1 at the weld, 106 in the solid, and 514 split longitudinally or bulged.

* During the year 30 horses, 10 donkeys, 43 beasts and cows, 77 sheep, 3 pigs, and 5 dogs were run over and killed.

Of the 239 axles which failed, 135 were engine axles, viz., 112 crank or driving, and 23 leading or trailing; 12 were tender axles, 3 were carriage axles, and 89 were waggon axles, 3 of which were the axles of salt waggons. 38 waggons belonged to owners other than the Railway Companies. Of the 112 crank or driving axles, 48 were made of iron and 63 of steel, and in 1 case the material was not stated. The average mileage of 47 crank or driving axles made of iron was 224,393 miles, and of 58 crank or driving axles made of steel 230,015 miles.

Of the 262 rails which broke, 92 were double-headed, 133 were single-headed, 24 were of the bridge pattern; 11 were Vignoles' rails, and in 2 cases the pattern was not stated; of the double-headed rails, 55 had been turned; 15 rails were made of iron and 246 of steel, and in one case the material was not stated.

II.—ACCIDENTS TO PASSENGERS FROM CAUSES OTHER THAN ACCIDENTS TO TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c., INCLUDING ACCIDENTS FROM THEIR OWN WANT OF CAUTION OR MISCONDUCT; ACCIDENTS TO PERSONS PASSING OVER LEVEL-CROSSINGS; TRESPASSERS; AND OTHERS.

Of the 553 persons killed and 1,051 injured in this division, 95 of the killed and 813 of the injured were passengers. Of these 15 were killed and 44 injured by falling between carriages and platforms, viz., 10 killed and 26 injured when getting into, and 5 killed and 18 injured when alighting from, trains; 9 were killed and 522 injured by falling on to platforms, ballast, &c., viz., 1 killed and 51 injured when getting into, and 8 killed and 471 injured when alighting from, trains; 35 were killed and 9 injured whilst passing over the line at stations; 96 were injured by the closing of carriage doors; 16 were killed and 34 injured by falling out of carriages during the travelling of trains; and 20 were killed and 108 injured from other causes. 72 persons were killed and 42 injured whilst passing over railways at level-crossings, viz., 43 killed and 17 injured at public level-crossings, 16 killed and 12 injured at occupation crossings, and 13 killed and 13 injured at foot-crossings. 267 persons were killed and 122 injured when trespassing on the railways; 84 persons committed suicide on railways; and of other persons not specifically classed, but mostly private people having business on the companies' premises, 35 were killed and 74 injured.

III.—ACCIDENTS TO SERVANTS IN THE EMPLOY OF RAILWAY COMPANIES OR CONTRACTORS, CAUSED BY THE TRAVELLING OF TRAINS OR THE MOVEMENT OF VEHICLES USED EXCLUSIVELY UPON RAILWAYS.

During the year there were 431 servants of companies or contractors reported as having been killed and 2,652 injured, in addition to those included in Division I. Of these 19 were killed and 295 injured whilst coupling or uncoupling vehicles; 4 were killed and 23 injured by coming in contact, whilst riding on vehicles during shunting, with other vehicles, &c. standing on adjacent lines; 5 were killed and 34 injured whilst passing over or standing upon buffers during shunting; 24 were killed and 200 injured in getting on or off, or by falling off engines, waggons, &c. during shunting; 6 were killed and 220 injured whilst breaking, spragging, or chocking wheels; 14 were killed and 66 injured whilst attending to ground-points, marshalling trains, &c.; 14 were killed and 225 injured whilst moving vehicles by capstans, turntables, props, &c. during shunting; and 41 were killed and 458 injured by various other accidents during shunting operations; 15 were killed and 85 injured by falling off engines, &c. during the travelling of trains; 13 were killed and 30 injured by coming in contact with over-bridges or erections on the sides of the line during the travelling of trains; 15 were killed and 187 injured whilst getting on or off engines, vans, &c. during the travelling of trains; 3 were killed and 263 injured whilst attending to, or by the failure of, machinery, &c. of engines in steam; 60 were killed and 102 injured whilst working on the permanent-way, sidings, &c.; 3 were killed and 1 injured whilst attending to level-crossing gates; 120 were killed and 188 injured whilst walking, crossing, or standing on the line on duty; 15 were killed and 98 injured by being caught between vehicles; 6 were killed and 56 injured by falling or being caught between trains and platforms, walls, &c.; 41 were killed and 20 injured whilst walking, &c. on the line on the way home or to work; and 13 were killed and 101 injured from various other causes.

Altogether, the number of persons killed and injured on railways in the United Kingdom in the course of public traffic, during the year ending 31st December 1889, as reported to the Board of Trade, was as follows :—

	Killed.	Injured.	Total for the corresponding Period in 1888.		Increase.		Decrease.	
			Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers :								
From accidents to trains, rolling-stock, permanent-way, &c.	88	1,016	11	594	77	422	—	—
By accidents from other causes -	95	813	96	814	—	—	1	1
Servants of companies or contractors :								
From accidents to trains, rolling-stock, permanent-way, &c.	4	117	7	93	—	24	3	—
By accidents from other causes -	431	2,652	389	2,100	42	552	—	—
Persons passing over railways at level-crossings.	72	42	53	24	19	18	—	—
Trespassers (including suicides) -	351	122	295	114	56	8	—	—
Other persons not coming in above classification.	35	74	54	87	—	—	19	13
Total - - - -	1,076	4,836	905	3,826	171	1,010	—	—

Note.—In addition to the above, the Railway Companies have reported to the Board of Trade, in pursuance of the 6th Section of the Regulation of Railways Act, 1871, the following accidents which occurred upon their premises, but in which the movement of vehicles used exclusively upon railways was not concerned, namely:—2 passengers killed and 201 injured whilst ascending or descending steps at stations; 47 injured by being struck by barrows, falling over packages, &c. on station platforms; 51 injured by falling off platforms; and 84 injured from other causes. Of servants of companies or contractors, 8 killed and 1,418 injured whilst loading, unloading, or sheeting waggons; 2 killed and 522 injured whilst moving or carrying goods in warehouses, &c.; 1 killed and 220 injured whilst working at cranes or capstans; 3 killed and 714 injured by the falling of waggon-doors, lamps, bales of goods, &c.; 8 killed and 482 injured by falling off, or when getting on or off, stationary engines or vehicles; 7 killed and 406 injured by falling off platforms, ladders, scaffolds, &c.; 3 killed and 453 injured by stumbling whilst walking on the line or platforms; 210 injured whilst attending to stationary engines in sheds; 2 killed and 111 injured by being trampled on or kicked by horses; 4 killed and 620 injured whilst working on the line or in sidings; and 3 killed and 407 injured from various other causes. Of other persons, most of whom were transacting business on the companies' premises, 20 were killed and 169 injured,—making a total in this class of accidents of 63 persons killed and 6,145 injured.

Thus the total number of personal accidents reported to the Board of Trade by the several Railway Companies during the year amounts to 1,139 persons killed and 10,981 injured.

TABLE No. 1.

GENERAL TOTAL.

NUMBER of PERSONS reported, during the Year ending 31st December 1889, as KILLED or INJURED on the RAILWAYS of the UNITED KINGDOM, distinguishing between PASSENGERS, SERVANTS of the COMPANIES or of CONTRACTORS, and OTHER PERSONS; and distinguishing also in the case of the Two former Classes between ACCIDENTS caused by ACCIDENTS to TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c., and ACCIDENTS happening otherwise.

	ENGLAND AND WALES.		SCOTLAND.		IRELAND.		UNITED KINGDOM.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
PASSENGERS:—								
From accidents to trains, rolling-stock, permanent-way, &c. -	7	613	1	115	80	288	88	1,016
By accidents from other causes, including accidents from their own want of caution or misconduct - - -	76	763	16	42	3	8	95	813
SERVANTS:—								
From accidents to trains, rolling-stock, permanent-way, &c. -	4	102	-	13	-	2	4	117
By accidents from other causes, including accidents from their own want of caution or misconduct - - -	336	2,407	84	216	11	29	431	2,652
OTHER PERSONS:—								
Whilst passing over railways at level-crossings - - -	68	35	3	2	1	5	72	42
Trespassers - - -	187	87	70	27	10	8	267	122
Suicides - - -	74	-	8	-	2	-	84	-
Miscellaneous, not included in either of the above - -	29	65	6	7	-	2	35	74
TOTAL - - -	781	4,072	188	422	107	342	1,076	4,836

N.B.—The Board of Trade state the cause of accident as returned by the Companies, but do not guarantee or otherwise adopt the statement, except in cases where an official inquiry has been held.

TABLE No. 2.

NUMBER of PERSONS reported, during the Year ending 31st December 1889, as KILLED or INJURED in the UNITED KINGDOM by the TRAVELLING of TRAINS or the MOVEMENT of VEHICLES used exclusively upon RAILWAYS, distinguishing between PASSENGERS, SERVANTS of RAILWAY COMPANIES, and OTHER PERSONS, and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury.

	ENGLAND AND WALES.		SCOTLAND.		IRELAND.		UNITED KINGDOM.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
PASSENGERS:—								
From accidents to trains, &c., <i>see Table No. 3</i>	7	613	1	115	80	288	88	1,016
From falling between trains and platforms	8	34	6	8	1	2	15	44
From falling on to the platform, ballast, &c. when getting into or out of trains	8	501	1	20	—	1	9	522
Whilst crossing the line at stations	32	8	3	1	—	—	35	9
By the closing of carriage doors	—	89	—	7	—	—	—	96
From falling out of carriages during the travelling of trains	14	31	2	1	—	2	16	34
By other accidents	14	100	4	5	2	3	20	108
TOTAL	83	1,376	17	157	83	296	183	1,829
SERVANTS:—								
From accidents to trains, &c., <i>see Table No. 3</i>	4	102	—	13	—	2	4	117
Whilst coupling or uncoupling vehicles	14	242	3	46	2	7	19	295
By coming in contact whilst riding on vehicles during shunting with other vehicles, &c. standing on adjacent lines	4	18	—	4	—	1	4	23
Whilst passing over or standing upon buffers during shunting	1	21	4	12	—	1	5	34
When getting on or off, or falling off, engines, waggons, &c. during shunting	15	175	9	23	—	2	24	200
Whilst breaking, spragging, or chocking wheels	5	204	1	14	—	2	6	220
Whilst attending to ground-points, marshalling trains, &c.	9	60	3	6	2	—	14	66
Whilst moving vehicles by capstans, turntables, props, &c. during shunting	13	211	1	14	—	—	14	225
By other accidents during shunting operations, not included in the preceding	32	428	8	24	1	6	41	458
From falling off engines, &c. during the travelling of trains	10	80	4	5	1	—	15	85
By coming in contact with over-bridges or erections on the sides of the line during the travelling of trains	11	24	1	6	1	—	13	30
When getting on or off engines, vans, &c. during the travelling of trains	13	178	1	7	1	2	15	187
Whilst attending to, or by the failure of, machinery, &c. of engines in steam	2	255	1	8	—	—	3	263
Whilst working on the permanent-way, sidings, &c.	47	88	13	13	—	1	60	102
Whilst attending to gates at level-crossings	2	1	1	—	—	—	3	1
Whilst walking, crossing, or standing on the line on duty	93	164	27	22	—	2	120	188
From being caught between vehicles	15	93	—	4	—	1	15	98
From falling or being caught between trains and platforms, walls, &c.	5	49	—	3	1	4	6	56
Whilst walking, &c. along the line on the way home or to work	33	19	7	1	1	—	41	20
Miscellaneous	12	97	—	4	1	—	13	101
TOTAL	340	2,509	84	229	11	31	455	2,769
OTHER PERSONS:—								
Whilst passing over railways at level-crossings	68	35	3	2	1	5	72	42
Trespassers	187	87	70	27	10	8	267	122
Suicides	74	—	8	—	2	—	84	—
Miscellaneous	29	65	6	7	—	2	35	74
TOTAL	358	187	87	36	13	15	458	238
SUMMARY:—								
Passengers	83	1,376	17	157	83	296	183	1,829
Servants	340	2,509	84	229	11	31	455	2,769
Other persons	358	187	87	36	13	15	458	238
TOTAL ALL CLASSES	781	4,072	188	422	107	342	1,076	4,836

TABLE No. 3.

ACCIDENTS to TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c. reported, during the Year ending 31st December 1889, as having occurred on the RAILWAYS in the UNITED KINGDOM, distinguishing the different Classes of Accident, and the Number of Passengers and others, and of Servants of Railway Companies, KILLED or INJURED in each Class of Accident.

	NUMBER OF CASES.				NUMBER OF PASSENGERS AND OTHERS.								NUMBER OF SERVANTS.							
	England and Wales.	Scotland.	Ireland.	United Kingdom.	England and Wales.		Scotland.		Ireland.		United Kingdom.		England and Wales.		Scotland.		Ireland.		United Kingdom.	
					Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Collisions between passenger trains or parts of passenger trains - - -	34	4	1	39	-	169	-	24	80	260	80	453	1	17	-	2	-	2	1	21
Collisions between passenger trains and goods or mineral trains, engines, and vehicles standing foul of the line -	34	4	1	39	6	117	-	12	-	-	6	129	-	25	-	5	-	-	-	30
Collisions between goods trains or parts of goods trains -	24	4	-	28	-	-	-	-	-	-	-	-	2	31	-	5	-	-	2	36
Trains coming in contact with projections from other trains travelling on parallel lines -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Passenger trains or parts of passenger trains leaving the rails - - -	33	7	4	44	-	175	-	39	-	-	-	214	-	6	-	-	-	-	-	6
Goods trains or parts of goods trains, engines, &c. leaving the rails - - -	13	-	-	13	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	2
Trains or engines travelling in the wrong direction through points - - -	5	2	1	8	-	10	1	7	-	-	1	17	-	2	-	1	-	-	-	3
Trains running into stations or sidings at too high a speed - - -	27	2	1	30	-	71	-	29	-	-	-	100	-	10	-	-	-	-	-	10
Trains running over cattle or other obstructions on the line - - -	87	35	13	135	-	-	-	4	-	-	-	4	-	-	-	-	-	-	-	-
Trains running through gates at level-crossings - -	43	-	1	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bursting of boilers or tubes, &c. of engines - -	3	-	-	3	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	3
Failure of machinery, springs, &c. of engines -	10	-	-	10	-	2	-	-	-	-	3	-	3	-	-	-	-	-	-	3
Failure of tyres - - -	639	29	-	668	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
„ wheels - - -	1	1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
„ axles - - -	175	54	10	239	1	62	-	-	-	-	1	62	1	1	-	-	-	-	1	1
„ brake apparatus - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
„ couplings - - -	8	-	1	9	-	5	-	-	-	28	-	33	-	2	-	-	-	-	-	2
„ ropes used in working inclines -	3	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
„ tunnels, bridges, viaducts, culverts, &c. -	4	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Broken rails - - -	245	15	2	262	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Flooding of portions of permanent-way - - -	11	-	1	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Slips in cuttings or embankments - - -	8	-	2	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Accidents in trains - - -	8	2	-	10	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Accidents at stations or involving injury to bridges or viaducts -	6	2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other accidents - - -	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL - - -	-	-	-	-	7	613	1	115	80	288	88	1016	4	102	-	13	-	2	4	117

TABLE No. 4.

g the Year ending 31st December 1889, distinguishing the different CLASSES of ACCIDENTS, the different
 vrant of Railway Companies, KILLED or INJURED on each Railway by those Accidents.

	The failure of axles.	The failure of brake apparatus.	The failure of couplings.	The failure of ropes used in working inclines.	The failure of tunnels, bridges, viaducts, or culverts.	Broken rails.	The flooding of portions of permanent-way.	Slips in cuttings or embankments.	Fire in trains.	Fire at stations or involving injury to bridges or viaducts.	Other accidents.	Number of Passengers and others.		Number of Servants.		Total all Classes.	
												Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
-	-	-	-	-	-	-	-	-	-	-	-	-	19	-	4	-	23
-	-	-	-	-	-	10	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	11	-	-	-	-	-	-	-	-	1	-	1
8	-	-	-	-	1	1	5	-	-	-	-	-	50	-	5	-	55
6	-	-	-	-	-	12	-	-	-	-	-	-	12	2	2	2	14
-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
19	-	-	-	2	-	37	4	4	-	5	-	-	9	-	11	-	20
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	2	-	2
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	1	-	-	-	1	-	-	-	-	-	-	72	1	17	1	89
34	-	-	-	-	-	47	-	-	1	-	-	6	73	-	24	6	97
-	-	-	-	-	-	5	-	-	-	-	-	-	9	-	-	-	9
3	-	3	-	1	10	-	-	1	6	1	-	-	19	-	4	-	23
7	-	2	-	-	-	19	-	-	-	-	-	-	5	-	1	-	6
6	-	-	-	-	-	13	-	-	-	-	-	-	39	-	5	-	44
5	-	-	-	-	-	11	2	-	-	-	-	1	67	-	1	1	68
1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	34	-	-	-	-	-	-	44	-	10	-	54
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	2
-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
34	-	2	1	1	19	-	-	3	1	-	1	-	147	-	9	-	156
-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	2
1	-	-	-	-	-	5	-	-	-	-	-	-	3	-	-	-	3
-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	2
-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	4
5	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-
-	-	-	-	-	-	1	-	-	-	-	-	-	24	-	-	-	24
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1

TABLE No. 4.—Number of Accidents to Trains

NAME OF COMPANY.	Col- lisions between pas- senger trains or parts of pas- senger trains.	Col- lisions between pas- senger trains and goods or mineral trains, engines, &c.	Col- lisions between goods trains or parts of goods trains.	Trains coming in contact with pro- jections from other trains travel- ing on parallel lines.	Pas- senger trains or parts of pas- senger trains leaving the rails.	Goods trains or parts of goods trains, &c. leaving the rails.	Trains or engines travel- ing in the wrong direction through points.	Trains running into stations or sidings at too high a speed.	Trains running over cattle or other obstruc- tions on the line.	Trains running through gates at level- cross- ings.	The bursting of boilers or tubes, &c. of engines.	The failure of ma- chinery, springs, &c. of engines.	The failure of tyres
ENGLAND AND WALES —cont.													
Wrexham, Mold, and Connah's Quay. Private Owners	-	-	-	-	1	-	-	-	-	-	-	-	1
	-	-	-	-	-	-	-	-	-	-	-	-	499
TOTAL, ENGLAND AND WALES	34	34	24	-	33	13	5	27	87	43	3	10	639
SCOTLAND.													
Caledonian	-	1	1	-	3	-	-	-	24	-	-	-	11
City of Glasgow Union	-	-	1	-	-	-	-	-	-	-	-	-	-
Dundee and Arbroath Joint	-	-	1	-	1	-	-	-	-	-	-	-	-
Glasgow and South-Western	2	2	1	-	1	-	-	1	3	-	-	-	2
Glasgow, Barrhead, and Kilmarnock.	-	-	-	-	1	-	-	-	-	-	-	-	-
Great North of Scotland	1	-	-	-	1	-	1	-	-	-	-	-	2
Highland	1	-	-	-	-	-	1	-	-	-	-	-	1
North British	-	1	-	-	-	-	-	1	8	-	-	-	11
Private Owners	-	-	-	-	-	-	-	-	-	-	-	-	2
TOTAL, SCOTLAND	4	4	4	-	7	-	2	2	35	-	-	-	29
IRELAND.													
Belfast and County Down	-	-	-	-	1	-	-	-	-	-	-	-	-
Belfast and Northern Counties	-	-	-	-	-	-	-	-	-	-	-	-	-
Bessbrook and Newry	-	-	-	-	-	-	1	-	-	-	-	-	-
Cavan, Leitrim, and Ros- common.	-	-	-	-	-	-	-	-	1	-	-	-	-
Cork, Blackrock, and Passage	-	-	-	-	-	-	-	-	-	-	-	-	-
Dublin, Wicklow, and Wex- ford.	-	-	-	-	-	-	-	-	-	-	-	-	-
Dundalk, Newry, and Greenore	-	-	-	-	-	-	-	-	-	-	-	-	-
Great Northern of Ireland	1	-	-	-	-	-	-	-	-	1	-	-	-
Great Southern and Western of Ireland.	-	-	-	-	3	-	-	-	-	-	-	-	-
Listowel and Ballybunion	-	-	-	-	-	-	-	-	-	-	-	-	-
Londonderry and Lough Swilly	-	-	-	-	-	-	-	-	1	-	-	-	-
Midland Great Western of Ireland.	-	-	-	-	-	-	-	-	-	-	-	-	-
Waterford and Limerick	-	1	-	-	-	-	-	1	11	-	-	-	-
TOTAL, IRELAND	1	1	-	-	4	-	1	1	13	1	-	-	-
TOTAL, UNITED KINGDOM	39	39	28	-	44	13	8	30	135	44	3	10	668

Rolling-Stock, Permanent-Way, &c.—continued.

	The failure of axles.	The failure of brake apparatus.	The failure of couplings.	The failure of ropes used in working inclines.	The failure of tunnels, bridges, viaducts, or culverts.	Broken rails.	The flooding of portions of permanent-way.	Slips in cuttings or embankments.	Fire in trains.	Fire at stations or involving injury to bridges or viaducts.	Other accidents.	Number of Passengers and others.		Number of Servants.		Total all Classes.	
												Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
	-	-	-	-	-	-	-	-	-	-	-	-	11	-	3	-	14
	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	175	-	8	3	4	245	11	8	8	6	1	7	613	4	102	11	715
	24	-	-	-	-	7	-	-	2	2	-	-	49	-	6	-	55
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	18	-	4	-	22
	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
	1	-	-	-	-	-	-	-	-	-	-	1	27	-	3	1	30
1	1	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	3
	15	-	-	-	-	7	-	-	-	-	-	-	18	-	-	-	18
	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	54	-	-	-	-	15	-	-	2	2	-	1	115	-	13	1	128
	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	5	-	1	-	-	-	-	-	-	-	-	80	288	-	2	80	290
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
	10	-	1	-	-	2	1	2	-	-	-	80	288	-	2	80	290
2	239	-	9	3	4	262	12	10	10	8	1	88	1,016	4	117	92	1,133

TABLE No. 5.

39, as KILLED or INJURED in the UNITED KINGDOM by the TRAVELLING of TRAINS or the MOVEMENT of VEHICLES on the RAILWAY, and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury

From falling off engines, &c. during the travelling of trains.		By coming in contact with over-bridges or erections on the sides of the line during the travelling of trains.		When getting on or off engines, vans, &c. during the travelling of trains.		Whilst attending to, or by the failure of, machinery, &c. of engines in steam.		Whilst working on the permanent-way, sidings, &c.		Whilst attending to gates at level-crossings.		Whilst walking, crossing, or standing on the line on duty.		From being caught between vehicles.		From falling or being caught between trains and platforms, walls, &c.		Whilst walking, &c. on the line on the way home or to work.		Miscellaneous		TOTAL.	
Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	5
-	1	-	1	-	-	-	-	2	-	-	-	2	2	-	2	-	-	1	-	-	4	14	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-
-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	14
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
1	4	-	3	2	6	-	20	1	6	-	-	3	9	1	2	-	4	3	2	-	5	15	131
-	3	3	1	2	1	-	1	5	6	-	-	3	11	1	4	-	2	2	2	2	2	28	72
-	1	-	-	-	1	-	1	1	1	-	-	-	1	-	1	-	-	2	-	-	-	3	10
-	12	1	2	2	32	-	29	5	7	-	-	12	20	-	12	-	8	4	2	1	9	38	324
-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	2	-	1	8
1	4	1	3	-	18	1	10	3	7	-	-	14	31	2	9	-	3	2	3	1	5	32	255
-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	1	7
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
3	30	1	3	2	57	-	137	10	22	-	-	15	33	5	38	1	14	4	-	1	34	64	825
-	-	-	1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	1	3	22
1	7	-	3	-	21	1	12	2	11	-	-	6	11	-	4	1	3	2	-	-	7	18	166
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
-	-	1	-	-	1	-	-	1	2	-	-	3	3	1	1	1	-	-	-	1	2	11	29
-	-	-	-	-	-	-	-	-	3	1	-	1	-	-	-	-	-	1	-	-	-	3	14
-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	2	-	4	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
-	4	2	1	-	2	-	3	1	2	-	-	3	7	1	-	-	-	-	1	1	1	11	53
-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
-	-	-	1	-	1	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	1	2	4
-	-	-	-	-	4	-	-	-	1	-	-	-	4	-	-	-	-	1	-	-	-	-	11
2	6	-	3	-	3	-	4	5	5	-	-	17	11	1	8	-	6	7	4	-	5	44	144
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2

TABLE No. 5.—Number of Servants reported

NAME OF COMPANY.	From acci- dents to trains, &c. See Table No. 4.		Whilst coupling or uncoupling vehicles.		By coming in contact whilst riding on vehicles during shunting with other vehicles, &c. standing on adjacent lines.		Whilst passing over, or standing upon, buffers during shunting.		When getting on or off, or falling off, engines, waggons, &c. during shunting.		Whilst braking, spragging, or chocking wheels.		Whilst attending to ground- points, marshalling trains, &c.		Whilst moving vehicles by capstans, turntables, props, &c. during shunting.		By other accidents during shunting operations, not included in the preceding.	
	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.
ENGLAND AND WALES—cont.																		
North-Eastern - - -	-	9	-	24	-	3	-	1	1	23	-	24	-	7	1	23	3	72
North London - - -	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	4
North Staffordshire - - -	-	-	2	1	-	-	-	-	-	-	-	1	-	1	-	-	1	1
North Union - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Preston and Wyre - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Rhondda and Swansea Bay - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Rhymney - - -	-	-	-	-	-	-	-	-	-	-	-	1	-	2	-	-	-	-
Seacombe, Hoylake, and Deeside - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Severn and Wye and Severn Bridge - - -	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Sheffield and Midland Joint - - -	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Somerset and Dorset Joint - - -	1	-	-	1	-	1	-	-	-	-	-	-	-	-	-	2	-	1
South-Eastern - - -	-	-	2	1	-	-	-	1	-	1	-	1	-	1	1	1	1	4
Taff Vale - - -	-	-	-	1	-	-	-	-	-	1	-	-	1	-	-	-	-	-
Tottenham and Hampstead Joint - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
West Lancashire - - -	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wrexham, Mold, and Connah's Quay - - -	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL, ENGLAND AND WALES	4	102	14	242	4	18	1	21	15	175	5	204	9	60	13	211	32	428
SCOTLAND.																		
Aberdeen Joint Station Committee - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caledonian - - -	-	6	-	29	-	1	2	9	3	11	-	14	1	5	-	8	1	12
Glasgow and Paisley Joint - - -	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Glasgow and South-Western - - -	-	4	-	9	-	1	-	2	2	3	-	-	-	-	1	3	3	6
Glasgow, Barrhead, and Kilnarnock Joint. - - -	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Great North of Scotland - - -	-	3	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-
Highland - - -	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-
North British - - -	-	-	3	6	-	1	2	1	1	9	-	-	2	1	-	3	4	6
TOTAL, SCOTLAND	-	13	3	46	-	4	4	12	9	23	1	14	3	6	1	14	8	24
IRELAND.																		
Belfast and Northern Counties - - -	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
Cavan, Leitrim, and Roscommon Light Railway and Tramway. - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dublin, Wicklow, and Wexford - - -	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Great Northern of Ireland - - -	-	2	1	1	-	-	-	-	-	-	-	2	1	-	-	-	1	3
Great Southern and Western of Ireland - - -	-	-	1	4	-	1	-	-	-	-	-	-	-	-	-	-	-	1
Midland Great Western of Ireland - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Waterford and Limerick - - -	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	1
TOTAL, IRELAND	-	2	2	7	-	1	-	1	-	2	-	2	2	-	-	-	1	6
TOTAL, UNITED KINGDOM	4	117	19	295	4	23	5	34	24	200	6	220	14	66	14	225	41	458

Killed or Injured, &c.—*continued.*

From the off ices, during travel- ing of trains.	By coming in contact with over- bridges or erections on the sides of the line during the travelling of trains.		When getting on or off engines, vans, &c. during the travelling of trains.		Whilst attending to, or by the failure of, machinery, &c. of engines in steam.		Whilst working on the permanent- way, sidings, &c.		Whilst attending to gates at level- crossings.		Whilst walking, crossing, or standing on the line on duty.		From being caught between vehicles.		From falling or being caught between trains and platforms, walls, &c.		Whilst walking, &c. on the line on the way home or to work.		Mis- cellaneous.		TOTAL.	
	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.
6	-	2	-	16	-	31	3	7	-	-	4	9	1	9	2	4	3	2	2	13	20	285
-	-	-	-	6	-	-	-	2	-	-	-	4	-	-	-	1	-	-	-	9	-	28
-	-	-	-	-	-	-	-	-	-	-	1	1	-	1	-	-	1	-	-	-	5	6
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
-	1	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	3	4
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
-	-	-	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
-	-	-	-	2	-	4	-	-	-	-	-	-	1	-	-	-	-	-	-	-	2	11
-	1	-	2	-	-	1	4	5	-	-	5	2	-	1	-	2	1	-	-	-	17	21
1	-	-	1	-	-	-	1	-	-	-	-	4	1	-	-	-	-	-	-	1	4	8
-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
80	11	24	13	178	2	255	47	88	2	1	93	164	15	93	5	49	33	19	12	97	340	2,509
-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1
1	1	2	-	3	-	4	6	9	-	-	12	13	-	3	-	2	2	1	-	2	30	135
-	-	-	-	-	-	-	2	-	-	-	1	-	-	-	-	-	-	-	-	-	3	2
2	-	2	1	2	1	2	1	-	-	-	3	2	-	1	-	-	3	-	-	2	16	41
-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	1
1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	3	4
-	-	-	-	-	-	1	-	-	-	-	3	-	-	-	-	-	-	-	-	-	6	1
1	-	2	-	2	-	1	3	4	1	-	7	6	-	-	-	1	2	-	-	-	25	44
5	1	6	1	7	1	8	13	13	1	-	27	22	-	4	-	3	7	1	-	4	84	229
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	2	1
-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	1	-	5	10
-	-	-	-	1	-	-	-	-	-	-	-	1	-	1	-	1	1	-	-	-	2	10
-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	-	2	-	-	-	-	1	4
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3
-	1	-	1	2	-	-	-	1	-	-	-	2	-	1	1	4	1	-	1	-	11	31
85	13	30	15	187	3	263	60	102	3	1	120	188	15	93	6	56	41	20	13	101	435	2,700

TABLE No. 6.

TABLE showing the different OCCUPATIONS of SERVANTS of RAILWAY COMPANIES and CONTRACTORS who were KILLED and INJURED during the Year ending 31st December 1889, and classifying their INJURIES as far as practicable.

CLASS OF SERVICE.	Fatal.	Amputations.			Fractures.		Dislocations.	Crushes.			Scalds, Burns.	Sprains, Cuts, or Bruises.	Severe.	Shaken.	Slight.	Unspecified Injury to				Miscellaneous.	Total Injured.
		Legs or Arms.	Feet or Hands.	Toes or Fingers.	Legs or Arms.	Collar-bones or Ribs.		Legs or Arms.	Feet or Hands.	Body.						Head.	Body.	Legs or Arms.	Feet or Hands.		
Brakemen and Goods-guards -	51	7	4	5	11	10	7	23	62	5	1	100	7	10	8	30	52	45	38	2	427
Capstaumen -	-	-	-	-	2	-	-	2	9	2	-	5	2	3	2	2	4	9	9	-	51
Carmen -	3	-	-	-	1	2	1	-	1	1	-	4	-	1	-	-	5	1	3	-	20
Carriage-cleaners -	7	1	-	-	1	-	1	4	6	6	1	7	-	1	3	1	9	9	3	-	58
Carriage or waggon examiners	7	2	-	-	3	-	1	2	2	-	2	4	2	3	-	-	1	-	-	-	32
Checkers -	-	-	-	-	-	-	-	1	2	2	-	4	3	1	-	-	1	1	2	-	17
Chockers, Chain-boys, and Slippers.	8	1	-	1	4	-	-	3	12	8	-	13	1	-	-	2	7	2	14	-	68
Clerks -	5	-	-	-	2	1	-	1	1	-	-	1	1	-	-	-	1	3	1	-	12
Engine-cleaners -	6	-	-	-	1	-	-	-	4	3	3	6	-	-	-	3	3	1	8	-	32
Engine-drivers -	19	1	2	-	10	7	1	2	16	-	21	58	9	5	3	17	33	44	28	1	258
Firemen -	28	3	2	4	7	3	1	5	38	6	28	74	17	7	12	25	25	40	38	-	335
Gatekeepers -	6	-	1	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	3
Greasers -	3	-	-	-	-	1	-	-	2	1	-	1	2	-	-	1	2	3	2	-	15
Guards, Passenger -	6	1	-	-	3	1	1	2	7	5	2	36	4	3	5	11	9	18	13	-	121
Horse-drivers -	3	-	-	3	1	3	1	2	7	7	-	9	1	1	-	1	4	8	8	-	56
Inspectors -	1	-	1	-	1	-	1	1	-	-	-	4	1	2	-	2	2	4	2	-	21
Labourers -	34	1	5	2	7	3	-	7	12	6	1	20	7	2	2	9	10	12	15	-	121
Lampmen -	6	1	-	-	-	-	-	-	1	-	-	7	-	-	-	1	1	-	1	-	12
Loaders and Sheeters -	3	-	-	-	1	-	-	2	3	2	-	5	2	-	-	1	3	4	1	-	24
Mechanics -	6	-	-	-	-	-	-	1	-	2	1	7	1	-	1	2	3	-	1	-	19
Messengers -	4	-	-	-	1	-	-	-	1	-	-	2	-	-	1	-	-	-	-	-	5
Number-takers -	1	-	-	-	-	-	-	-	1	1	-	3	-	1	-	2	1	1	1	-	11
Permanent-way Men -	91	5	1	2	4	7	1	1	8	2	-	27	11	2	4	10	8	5	6	-	104
Pointsmen -	6	-	-	1	1	1	-	-	1	1	-	3	1	1	-	-	3	-	1	-	14
Policemen -	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	2
Porters -	61	6	4	3	14	15	3	15	51	30	3	103	13	6	6	20	39	51	61	-	443
Shunters -	31	1	2	7	9	12	4	14	53	14	-	66	15	7	8	13	31	46	53	-	355
Signal-fitters -	2	1	-	-	2	1	-	-	-	1	-	1	-	-	1	1	2	-	-	-	10
Signalmen -	5	-	1	-	1	1	-	-	2	2	-	7	1	-	2	2	2	3	-	-	24
Station-masters -	2	1	-	-	-	1	-	-	1	3	-	3	-	-	-	2	2	1	-	-	14
Ticket-collectors -	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	2
Watchmen -	3	-	-	-	1	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	3
Yardsmen -	3	2	-	-	1	-	1	1	5	1	-	10	2	-	-	2	3	1	3	-	32
Miscellaneous -	6	1	-	-	3	-	1	-	4	-	-	5	4	2	1	1	7	1	3	-	33
Contractors' Servants -	18	-	-	-	1	-	1	-	1	1	-	9	3	3	3	1	-	3	4	-	30
TOTAL -	435	35	23	28	94	69	26	89	315	112	63	607	110	62	62	163	273	316	319	3	2769

TABLE No. 7.

NUMBER of PERSONS reported, during the Year ending 31st December 1889, as having been KILLED or INJURED whilst upon the Companies' Premises, by Accidents in which the Movement of Vehicles used exclusively upon Railways was not concerned, distinguishing between Passengers, Servants of Companies, and other Persons, and classifying, as far as practicable, the Nature and Causes of the Accidents occasioning the Death or Injury.

	ENGLAND AND WALES.		SCOTLAND.		IRELAND.		UNITED KINGDOM.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
PASSENGERS :—								
Whilst ascending or descending steps at stations - - - -	2	199	—	—	—	2	2	201
By being struck by barrows, by falling over packages, &c. on station platforms - -	—	47	—	—	—	—	—	47
From falling off platforms - - -	—	51	—	—	—	—	—	51
By other accidents - - - -	—	83	—	1	—	—	—	84
TOTAL - - - -	2	380	—	1	—	2	2	383
SERVANTS :—								
Whilst loading, unloading, or sheeting waggons - - - -	8	1,413	—	4	—	1	8	1,418
Whilst moving or carrying goods in warehouses, &c. - - -	2	522	—	—	—	—	2	522
Whilst working at cranes or capstans -	1	219	—	—	—	1	1	220
By the falling of waggon-doors, lamps, bales of goods, &c. - - -	3	738	—	5	—	1	3	744
From falling off, or when getting on or off, stationary engines or vehicles -	8	472	—	8	—	2	8	482
From falling off platforms, ladders, scaffolds, &c. - - -	6	401	1	3	—	2	7	406
By stumbling whilst walking on the line or platforms - - - -	3	450	—	3	—	—	3	453
Whilst attending to stationary engines in sheds - - - -	—	207	—	3	—	—	—	210
By being trampled on or kicked by horses	1	110	1	1	—	—	2	111
Whilst working on the line or in sidings	3	617	1	2	—	1	4	620
Miscellaneous - - - -	2	402	1	5	—	—	3	407
TOTAL - - - -	37	5,551	4	34	—	8	41	5,593
PERSONS ON BUSINESS AT STATIONS AND OTHERS - - - -								
	17	161	2	6	1	2	20	169
SUMMARY :—								
Passengers - - - -	2	380	—	1	—	2	2	383
Servants - - - -	37	5,551	4	34	—	8	41	5,593
Persons on business at stations and others	17	161	2	6	1	2	20	169
TOTAL ALL CLASSES -	56	6,092	6	41	1	12	63	6,145

REPORTS TO THE BOARD OF TRADE BY INSPECTING OFFICERS OF THE RAILWAY DEPARTMENT UPON CERTAIN ACCIDENTS WHICH HAVE BEEN INQUIRED INTO.

CALEDONIAN :	Page	LONDON AND NORTH-WESTERN :	Page
Major-General Hutchinson's report on the double collision which occurred on the 2nd December near St. Rollox station, when an unattached engine, which had previously collided with a goods train, was run into by a passenger train -	23	Colonel Rich's report on the collision which occurred on the 3rd August at Llandudno Junction station, between a passenger train and a train of empty coaches -	85
GLASGOW AND SOUTH-WESTERN :		Major Marindin's report on the collision which occurred on the 25th August at Welford and Kilworth station, between an up passenger train and a milk van -	87
Major Marindin's report on the collision which occurred on the 8th July at Fairlie Pier station, between a passenger train and the buffer-stops -	28	Major Marindin's report on the collision which occurred on the 26th August at Stockport station, between an incoming passenger train and an engine standing at the rear of a train of empty coaches -	90
GREAT EASTERN :		Major Marindin's report on the collision which occurred on the 1st September at Crewe station, between a down passenger train and the buffer-stops -	94
Major-General Hutchinson's report on the collision which occurred on the 9th August, between Bishopsgate and Liverpool Street stations, between a passenger train and an empty carriage train -	30	Major-General Hutchinson's report on the fatal collision which occurred on the 4th October near Long-sight station, between an up local passenger train and two engines and a brake-van which were standing on the line -	104
Major-General Hutchinson's report on the accident which occurred on the 15th October at Stepney Junction station, when part of a London, Tilbury, and Southend Company's passenger train left the rails at the junction crossing -	35	Colonel Rich's report on the accident which occurred on the 3rd November at Colwyn Bay station, when two coaches of an excursion train left the rails when the train was being backed into a siding -	113
Major-General Hutchinson's report on the collision which occurred on the 13th December at Fordham Junction station, between two passenger trains -	38	LONDON AND NORTH-WESTERN AND GREAT WESTERN :	
GREAT NORTHERN OF IRELAND :		Colonel Rich's report on the collision which occurred on the 16th September at Addison Road station, between a Great Western train and two gas-tank waggons which were standing near the stop-buffers -	116
Major-General Hutchinson's report on the fatal collision which occurred on the 12th June near Armagh station, when an excursion train was divided to enable it to be taken on in two portions, and the rear portion, which had been left on the incline, ran back towards Armagh and came into collision with an ordinary passenger train -	41	LONDON AND SOUTH-WESTERN :	
GREAT NORTH OF SCOTLAND :		Major Marindin's report on the collision which occurred on the 29th July at Eastleigh station, between three empty vehicles and the rear of the passenger train to which they were to be attached -	118
Colonel Rich's report on the collision which occurred on the 25th July at Brucklay station, between a mixed train and some waggons that were standing in a siding -	58	Major Marindin's report on the accident which occurred on the 24th December, between Morthoe and Braunton stations, when an up passenger train left the rails -	120
Major Marindin's report on the collision which occurred on the 21st November at Huntly station, between two passenger trains -	62	LONDON, CHATHAM, AND DOVER :	
GREAT WESTERN :		Major-General Hutchinson's report on the accident which occurred on the 1st July at Nunhead Junction station, when part of an up passenger train left the rails -	125
Colonel Rich's report on the collision which occurred on the 2nd August at North Road station, Plymouth, between a passenger train and two coaches which were to be attached to it -	66	Major-General Hutchinson's report on the collision which occurred on the 14th November at St. Paul's junction, near St. Paul's station, between an up passenger train and an engine -	129
Colonel Rich's report on the accident which occurred on the 18th December on the Wiveliscombe Viaduct, between Saltash and St. Germans stations, when a down mail train left the rails -	70	MANCHESTER, SHEFFIELD, AND LINCOLNSHIRE :	
LANCASHIRE AND YORKSHIRE :		Major Marindin's report on the collision which occurred on the 1st September at Sheffield station, between a down passenger train and the rear of a special fish train -	135
Major Marindin's report on the collision which occurred on the 7th July at Preston station, between a down passenger train and the buffer-stop -	73	MIDLAND :	
Major-General Hutchinson's report on the double collision which occurred on the 7th December at Cheetham Hill junction, near Victoria station, Manchester, when a London and North-Western Company's coal train was run into at the rear by a Lancashire and Yorkshire Company's down passenger train, and the rear van of the coal train being thrown foul of the up fast line was run into by a Lancashire and Yorkshire Company's up passenger train -	75	Major Marindin's report on the collision which occurred on the 2nd August at Shefford station, between a special up goods train and a down mixed train -	140
LISTOWELL AND BALLYBUNION :		Major Marindin's report on the collision which occurred on the 3rd September at Morecambe station, between an engine and the rear of a passenger train to which it was to be attached -	144
Major-General Hutchinson's report on the accident which occurred on the 29th September, when a passenger train left the line close to Galey Bridge, near Listowell -	82	Major Marindin's report on the collision which occurred on the 14th September at Burton-upon-Trent station, between a London and North-Western passenger train and a Midland empty train -	147

MIDLAND—continued.

Major Marindin's report on the collision which occurred on the 29th November at Normanton Joint station, between an express passenger train and two empty carriages which were standing on the line - - - - - 149

MIDLAND GREAT WESTERN OF IRELAND :

Major-General Hutchinson's report on the fatal accident which occurred on the 14th June to a harvestman when entering a train at Ballyhannis station - - - - - 154

Major-General Hutchinson's report on the collision which occurred on the 30th September at Carrick-on-Shannon station, between a down special train of empty waggons and an up mixed mail train - - - - - 157

NEATH AND BRECON :

Colonel Rich's report on the accident which occurred on the 13th July, between Cray and Devynock stations, when part of a passenger train left the rails - - - - - 160

NORTH BRITISH :

Major Marindin's report on the collision which occurred on the 24th August at Musselburgh station, between a passenger train and the buffer-stops - - - - - 162

Major-General Hutchinson's report on the collision which occurred on the 15th October at Wark station on the Newcastle and Riccarton (single line) branch, between a passenger train and a portion of a goods train - - - - - 164

Page NORTH-EASTERN :

Major-General Hutchinson's report on the accident which occurred on the 19th August at Exhopte station, when an express passenger train left the rails - - - - - 168

Major-General Hutchinson's report on the accident which occurred on the 7th September at York station, between a passenger train, the Yorkshire Railway, and the Great Northern - - - - - 174

SOUTH-EASTERN :

Major-General Hutchinson's report on the accident which occurred on the 30th August between Boreham and Broomfield stations, when an up passenger train left the rails - - - - - 177

Major-General Hutchinson's report on the accident which occurred on the 2nd September at Canterbury station, between an up passenger train and the rear of a down passenger train - - - - - 180

Colonel Rich's report on the accident which occurred on the 15th October between Seven Street Junction and Cannon Street station, between two passenger trains - - - - - 182

Major-General Hutchinson's report on the collision which occurred on the 17th December near London Bridge station, between an up passenger train and a foot engine - - - - - 184

For other Reports of Inquiries into Accidents which have occurred during the year,
see [C.—5746.] and [C.—5885.]

CALEDONIAN RAILWAY.

Board of Trade, (Railway Department),
1, Whitehall, London, S.W.,

27th December 1889.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 5th instant, the result of my inquiry into the causes of the double collision which occurred on the 2nd instant near St. Rollox station on the Caledonian Railway.

In this case, while the 12.5 p.m. goods train from Edinburgh for Buchanan Street goods station, Glasgow, was moving forward after standing at the down home-signal of Sighthill west junction, it was run into at the rear by an unattached engine which was on its way to Buchanan Street goods station to take out the 5.45 p.m. goods train for Leith; this engine a short time afterwards being again in its turn run into by the 12.40 p.m. passenger train from Oban for Buchanan Street, where it was due at 5.35 p.m.

In the passenger train, six passengers, the driver, and four Company's servants travelling in the front brake-van were injured, one of the latter seriously. The guard of the goods train and the driver of the unattached engine were also injured.

The goods train consisted of engine and tender, eight waggons, and a brake-van, and it was divided into three portions, viz., (1) the engine, tender, and six waggons; (2) two waggons; and (3) the brake-van; but no wheels were knocked off the rails.

The unattached engine (running tender in front) also kept the rails.

The passenger train consisted of a four-wheel coupled engine and tender, running engine in front, brake-van, three vehicles and brake-van, the brake-power being derived from the Westinghouse brake applying to the four coupled wheels of the engine, all the tender wheels and the four wheels of each of the five vehicles, and there being also the usual hand-brakes. The trailing-wheels of the second vehicle from the engine left the rails, and the engine, tender, and front brake broke away from the rest of the train and stopped in 30 or 40 yards from it.

A list of the damage is given in the Appendix.

Description.

Sighthill East and West junction cabins are nearly half a mile apart, the latter being situated on the down side of the line, and 45 yards East of the East end of St. Rollox station platforms. The down starting-signal of the East cabin is 290 yards on the West side of that cabin, and below it is the down distant-signal of the West cabin, 440 yards from the down home-signal of the latter, which down home-signal is 120 yards East of the West cabin. The line between the down starting-signal of the East cabin and the down home-signal of the West cabin, and for some distance beyond the latter, is straight and on a gradient falling towards St. Rollox of 1 in 80. A siding runs parallel to and alongside of the down line from the East cabin as far as the down signal of the West cabin. Both collisions occurred almost at the same spot, viz., about 65 yards on the East side (i.e., outside) of the down home-signal of the West cabin, or about 185 yards on the East side of that cabin.

Evidence.

1. *Alexander Goodlet*, driver; 23 years' service, 15 years driver.—I commenced work on December 2nd at 11.5 a.m. to sign off at 1.0 a.m. on the 3rd. I was driver of the 12.5 p.m. goods train from Edinburgh for Buchanan Street, Glasgow. I stopped at Sighthill East at about 4.20 p.m., where I did some work in the goods yard, and I left it at 5.15 p.m. for Buchanan Street with engine and tender, nine waggons, and a brake-van. On approaching Sighthill West I found the distant-signal and home-signal both at danger, and I stopped with the engine close to the home-signal. I remained standing seven minutes, when, without any warning, the back of the train was run into by an engine, after I had moved forward about 30 yards on the signal having been lowered. I still continued moving forward, but stopped alongside St. Rollox platform to see if any damage had been done. I found the train divided into three parts, viz., (1) engine, tender, and six waggons; (2) seventh

and eighth waggons; and (3) the brake-van; the three parts were pretty close together. I did not feel much of the collision on the engine, and I heard no whistle before it took place. It was a splendid night, but dark, but good for seeing signals or lights. Neither I nor my fireman was hurt. My engine stopped about the centre of the platform at St. Rollox. I was running five to ten minutes late. I whistled when stopped at the Sighthill West home-signal, and did not send my fireman forward to the signalman as I could see everything so plain, the night being good for seeing any distance. It is a common thing for goods trains to be kept at home-signals when running in front of passenger trains, instead of being let forward to the starting-signals, in order that they may be more readily shunted to allow the passenger trains to pass. In a case like this seven minutes is not long to stand before sending the fireman to make inquiry.

ACCIDENTS TO PERSONS OTHER THAN PASSENGERS OR SERVANTS OF RAILWAY COMPANIES.

The accidents to persons passing over railways at level crossings show a considerable increase, the numbers being 72 killed and 42 injured, against 53 killed and 24 injured in 1888. The number of trespassers were 267 killed and 122 injured, against 230 killed and 114 injured in 1888, or an increase of 37 in the number killed, and 8 in the number injured. The number of suicides were 84, against 65 in 1888.

ABSOLUTE BLOCK AND INTERLOCKING SYSTEMS.

The amount of progress that has been made in the adoption of these systems is stated in the Returns annually presented to Parliament.

The proportion in which the signal and point levers had been interlocked on railways was 94 per cent. in England, 83 per cent. in Scotland, 60 per cent. in Ireland, and 91 per cent. for the United Kingdom, the last figure showing an increase of 1 per cent. during the year. The interlocking on some railways in England is still incomplete, but there has been an increase of $\cdot 5$ per cent.; in Scotland 1 per cent.; and in Ireland $\cdot 1$ per cent.

The Block System has been largely extended since 1873, when 6,217 miles out of 16,082 miles of double and single line then open were worked on that system. At the end of 1889 this system had been adopted on 15,091 miles out of 18,944 miles open for traffic. The progress made in England, Scotland, and Ireland is as follows:—

In England and Wales, at the end of 1889, out of 13,305 miles of double and single lines open, 12,403 miles were worked upon the block system. In Scotland, out of 2,861 miles of double and single lines open, 2,004 miles were so worked. In Ireland, out of 2,777 miles of double and single lines open, 684 miles were so worked.

The proportion of double and single lines now worked on the block system, including the train tablet and the electric staff, is 85 per cent. in England, 70 per cent. in Scotland, and 24 per cent. in Ireland.

The proportion of double lines, apart from single lines, worked on the block system, is 98 per cent. in England and Wales, 100 per cent. in Scotland, and 35 per cent. in Ireland; the total for the United Kingdom being 94 per cent.

With regard to single line working, the train staff system with tickets has in recent years been required to be used in conjunction with the absolute block system, and the length so worked amounts to 3,859 miles; a length of 596 miles is, however, at present worked on the absolute block without the train staff.

815 miles are worked on the single engine system, and 101 miles on train staff system without tickets, systems approved by the Board of Trade.

Besides the above, 74 miles are worked by permissive block; and 115 miles by train staff and electric telegraph combined.

The passing of the Act of 1889 will doubtless lead to an acceleration of progress in absolute block working and interlocking.

LEVEL CROSSINGS.

As in previous years, attention was directed during the year to the question of level crossings. In the majority of the cases which came under the notice of the Department, either through the occurrence of accidents or by complaints from local authorities and individuals, the Board of Trade had no statutory authority to compel the railway companies to make better provision for the safety of the public. In every case, however, in which complaint was made, or whenever a coroner's jury made a recommendation on the subject, the Board of Trade communicated with the company concerned. Satisfactory arrangements were made with respect to public road level crossings in several instances. At seven footpath and occupation crossings, and at five station crossings, the companies interested promised to construct footbridges or subways.

CONTINUOUS BRAKES.

The continuous brakes return laid before Parliament for the half-year ended 31st December 1889, shows that the number of vehicles fitted with brakes complying with some or all of the conditions laid down in the circular of this department amounted, at that date, to 80 per cent. of the number in use, and that the number of vehicles fitted with pipes and connexions only, amounted to another 14 per cent.

GENERAL REMARKS.

It is with great regret that I refer to the occurrence in the past year of the calamitous and lamentable accident which took place near Armagh on the Great Northern Railway of Ireland, in which a large number of passengers were killed and injured. The causes which led to this accident are set out at pages 18 and 19. It is earnestly to be hoped that the Company will, without loss of time, adopt a brake fulfilling the requirements of the Board of Trade, and not open to the serious objections which contributed to this disaster.

The accident at Ryhope on the North-Eastern Railway, attended with serious injuries to a large number of passengers, that at Longsight, near Manchester, on the London and North-Western Railway, in which several passengers were killed and a large number injured, that at Cheetham Hill junction, on the Lancashire and Yorkshire Railway, in which also a large number of passengers were injured, serve to show that very slight causes may lead to most serious accidents, and the necessity for careful attention to the rules adopted for working the trains, and for the adoption of all improvements for safe working which experience can devise.

After the serious accident to an excursion train from the breaking of an axle of the engine, which occurred near Penistone, on the Manchester, Sheffield, and Lincolnshire Railway, referred to at pages 8 and 9, the Board of Trade deemed it desirable to bring the recommendations of the Inspecting Officer relative to the inspection of such axles under the consideration of the Railway Companies Association. The correspondence in this matter is given in Appendix 3.

Several accidents have occurred from trains entering terminal stations at too great speed and coming into collision with the buffer-steps, or with empty vehicles standing in the bays. It is probable that many of these buffer-stop accidents would be prevented if the rule for entering terminal stations were that the continuous brake was never to be used except on an emergency, and not merely that the speed is to be such that the train can be stopped by the use of the hand-brakes only.

With regard to the fatal accident to a female passenger on the Caledonian Railway, whose head was struck by a pouch containing letter bags hanging from a standard at the side of the line, the Board of Trade have been in communication with the General Post Office, with a view to the modification of the arrangements in force. Up to the present, however, that Department have not been able to make any change in the present system. The matter is still the subject of correspondence.

I regret also to have to refer to the number of instances in which servants of the Companies, performing duties connected with the trains to which accidents occurred, had been at the time of the accident on duty for a large number of hours.

I have the honour to be, Sir,

Your obedient Servant,

Railway Department,
Board of Trade,
August 1890.

COURTENAY BOYLE.

Conclusion.

Both of these collisions were brought about by a misunderstanding between the signalmen in Sighthill East and West junction cabins, owing to which misunderstanding the signalman in the West cabin was unaware that the goods train, which was run into by the unattached engine, had been standing at his home-signal for about seven minutes; he accordingly lowered this signal and the down starting-signal upon receiving "Line clear" from the station in advance, and then upon seeing the goods train pass his cabin, he, in ignorance that there had been a collision, and not noticing that the goods train had been divided into three portions, gave "Line clear" for the passenger train, after having put his down distant and home-signals to danger to protect the goods train which was standing alongside St. Rollox platform. The passenger train then came on and struck the unattached engine (which is stated to have been just on the move) with considerable force about 65 yards outside the West cabin down home-signal, at which the driver of the passenger train states he had been quite prepared to stop if necessary.

Whether this misunderstanding was caused by the mistake of Calder or Barry, the respective signalmen, it is difficult to say.

Calder is an experienced signalman of 6½ years' service in that capacity, although he had been only three days in Sighthill East cabin at the time of the collisions; he had come on duty at 2.0 p.m. for a spell of eight hours, and had a telegraph boy to assist him in booking trains, and attending to the speaking instrument. He affirms that all block signals for the goods train, unattached engine, and passenger train were sent and received without any hitch except that the "Be ready" signal for the passenger train was not accepted till after he had offered it twice; the times of passing being respectively 5.14, 5.23, and 5.28½ p.m. The telegraph boy who was engaged at the speaking instrument between 5.14 and 5.22 is not able to throw much light upon what signals passed during this time between the East and West cabins. Soon after the collisions Calder states that Barry asked him on the speaking instrument why he had sent on the unattached engine against the block.

Barry was appointed signalman only a fortnight before the collision; he had learned the duties while employed as ticket collector at St. Rollox station since August 1888, and was considered and felt himself quite competent for the work. He had come on duty at 4.0 a.m. on the 2nd instant, to remain till 6.0 p.m.; his proper hour of commencing work was 6.0 a.m., but he had come on two hours earlier to oblige his mate, whose father was dying, and had consequently been at work about 13½ hours at the time of the collisions. Barry's account of what passed with reference to the goods train and unattached engine between him and Calder differs very materially from Calder's. According to Barry, after he had accepted the "Be ready" signal for the goods train at 5.12 p.m., he did not receive "Train on line" for it, but at 5.23 p.m. Calder gave the error or amend signal (4 pause 4) which he acknowledged, and he then immediately received the signal for an unattached engine (2 pause 3); he acknowledged this signal with one beat only, the block-signal having remained lowered ever since he had accepted the "Be ready" signal for the goods train 11 minutes previously. At 5.24 p.m. the unattached engine was given "On line" with two beats, upon which Barry raised the semaphore and gave the "Be ready" on to Buchanan Street tunnel West, and on getting the block-signal accepted took off the out-door signals. Two minutes after this, at 5.26 p.m., the goods train and *not* the unattached engine passed the cabin and stopped alongside the platform, though the starting-signal was off in front of the engine. At 5.25 p.m. Barry received "Be ready" for the Oban train, but he did not accept it as the section was not clear; it was then repeated a second and third time, and on its being given the third time, after the goods train had passed the cabin at 5.26 p.m., he accepted it, when the train was immediately given "On line," Barry raising the semaphore, but keeping his home and distant signals at danger in complete ignorance that the unattached engine was standing at the home-signal, and being unaware until informed to that effect by the St. Rollox station-master at 5.50 p.m., that there had been two collisions. On getting "On line" for the unattached engine, Barry belled it on as such to Buchanan Street tunnel West cabin, and then on finding it was a goods train, he gave the error and amend signal, these statements being confirmed by the entries in the Buchanan Street tunnel West train register book.

It is clear, I think, that Barry was deceived by some action on the part of Calder with regard to the telegraphic signals for the goods train and unattached engine, and unless Barry had fallen into a doze and dreamt it, it is difficult to understand how he could have imagined the receipt of the error and amend signal (4 pause 4) unless Calder had actually sent it. On the one hand, Barry stoutly denies that he was sleepy,

and Calder, on the other hand, that he sent the signal. Barry is of course to blame for having come on duty two hours earlier than he ought to have done, viz., at 4.0 instead of 6.0 a.m. (though this was done with a kindly feeling to oblige his mate, whose father was dying), and it may well have been that, at the time of the collisions, when he had been on duty about 13½ hours, he was in a drowsy condition. He also committed a breach of rules in giving "Line clear" for the passenger train before the tail of the goods train had passed the St. Rollox starting-signal. He must too have been keeping a bad look-out, or he could hardly have failed to see that the goods train passed his cabin in a dislocated condition. The principal blame, at any rate for the second collision, must I think therefore rest upon Barry, though as regards the first one there is, in my opinion, good reason to suppose that Calder (who had been on duty 3½ hours at the time of the collisions) made some mistake in signalling the goods train and unattached engine.

In a minor degree the drivers and firemen of all three engines seem to me to be deserving of censure.

The driver of the goods engine should have whistled, or sent his fireman to the signal-cabin, while he was standing seven minutes at Sighthill West cabin home-signal, and after the first collision should certainly have at once taken means to inform the signalman that there had been a collision.

The driver and fireman of the unattached engine must have been keeping an indifferent look-out not to have realised, that the tail lights of the goods train were on the line they were running on, long before they did so. They were of course deceived by the signals being off for them as they approached Sighthill West cabin; still on a fine night and on a perfectly straight line, the fact of the red lights being on the main line and not on the siding parallel to it, might have been realised much farther off than the 15 or 20 yards deposed to; in addition to which had the lights been on the siding, the one next the main line should have been showing white. On the collision occurring there was again an absence of promptness in endeavouring to call the signalman's attention to what had happened.

As regards the driver and fireman of the Oban train, there is less excuse for them than for the driver and fireman of the unattached engine, for they were approaching Sighthill West cabin with the distant and home signals both at danger, and should therefore certainly have seen the lights showing from the rear of the engine they ran into, so as to know it was on the main line, for a much greater distance than the 16 yards spoken of by the driver.

The drivers of the goods train, unattached engine, and passenger train, and the goods guard, had been on duty about 6½ hours, three-quarters of an hour, 6½ hours, and 13 hours respectively, when the collisions occurred. Had the driver and guard of the goods train completed their regular day's work they would have been engaged for the objectionably long periods of about 14 and 13 hours respectively.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

C. S. HUTCHINSON,
Major-General, R.E.

APPENDIX.

STATEMENT as to DAMAGE to ROLLING STOCK by ACCIDENT at SAINT ROLLOX on 2nd December 1889.

Brake-van, No. 335,

Of 12.5 p.m. goods train at Edinburgh; buffer-beam and four end standards broken.

Goods Engine, No. 345,

By colliding with brake-van 335 of goods train, when on its way to Buchanan Street, running tender first, to work 5.45 p.m. goods, was not damaged; but by the engine of the 12.40 p.m. passenger train ex Oban running into collision with it, was damaged as follows: front buffers and buffer-beam angle irons destroyed; buffer-plate, drawhook, and ends of frame damaged.

PASSENGER TRAIN.

Engine, No. 35.

Front buffers, buffer-beam, plate and angle irons, also cylinder water-cocks destroyed; outside frame, left cylinder, and drawhook damaged.

Brake-van, No. 60.

End lights and one corner pillar broken.

Composite Carriage, No. 125.

Three buffer-castings, one buffer-spindle, and one footboard broken, and one buffer-spindle bent.

Composite Carriage, No. 207.

One buffer-casting and one end panel broken, and one buffer-spindle bent.

Printed copies of the above report were sent to the Company on the 25th January.

GLASGOW AND SOUTH-WESTERN RAILWAY.

Board of Trade, (Railway Department,)
1, Whitehall, London, S.W.,

August 6, 1889.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 12th ult., the result of my inquiry into the causes of a collision which occurred on the 8th ult. at Fairlie Pier station on the Glasgow and South-Western Railway.

In this case, when the seven rear vehicles of the 10.30 a.m. train from Glasgow to Largs, which had been detached at Fairlie station, were being taken by the regular shunting engine to Fairlie Pier station, the driver was unable to stop at the proper place at the platform, and the engine came into collision with the buffer stops, and drove them back. No vehicles left the rails, but the second and third carriages from the front were buffer-locked.

Sixteen passengers in all have complained of slight injuries.

The engine was not damaged. The damages to the carriages were as follows:—

No. 222, *third-class*.—One end beam shaken, one buffer guide broken.

No. 219, *third-class*.—One end beam shaken, one buffer spindle bent, and one buffer guide broken.

No. 441, *third-class*.—Two buffer spindles bent and one end step broken.

No. 323, *third-class*.—One end beam broken.

The train consisted of engine and tender, four *third-class* and two composite carriages and brake van.

The vehicles were fitted with continuous automatic vacuum brakes, but the engine was not fitted, and the only brakes available were the hand-brakes upon the tender and the guard's van.

Description.

Fairlie Pier station is a terminal station, with two dock lines, both signalled for arrival and departure.

It is about 1,600 yards from Fairlie station, but the loop running into the pier station does not leave the main line to Largs until after this line has passed through a tunnel 968 yards in length, the junction, with facing points upon the down line, being 40 yards outside the east end of the tunnel.

The main line falls upon a gradient of 1 in 110 through the tunnel towards the junction, but the loop from the junction into Fairlie Pier station is level, and upon a curve to the left looking towards the station.

The following distances from the junction points should be noted:—

To signal cabin	-	-	-	58 yards.
To splitting signals for the docks	-	-	-	63 "
To outer end of platform	-	-	-	290 "
To outer end of station roof	-	-	-	390 "
To buffer stops	-	-	-	463 "

Evidence.

James Buchanan states: I have been about 15 years in the service, and a driver for six years. I have for the last three summers been employed at Fairlie. On the 8th instant I came on duty at 6 a.m. at Ardrossan. I came coupled with the 7.5 a.m. goods train to West Kilbride, which started at 6.40, and then ran light to Fairlie station, arriving there at about a quarter to seven. During the day I was employed between Fairlie, Fairlie Pier, and Largs, at my ordinary work. At six minutes past 12 I left Fairlie station for Fairlie pier with six carriages and a brake-van, which had formed the rear portion of the 10.30 a.m. train from Glasgow to Largs. My engine is a six-wheeled tender engine with the leading and driving wheels coupled. I was running engine first. I had an ordinary hand brake working blocks on each of the six tender wheels. The train was fitted with

continuous vacuum automatic brake, but my engine was not fitted. There was a brake in the guard's van. I put on steam to start, and shut it off at the usual place, the first shaft inside the tunnel. My tender brake was applied slightly soon after. Coming out of the tunnel, I was running at about 10 miles an hour, my usual speed. I thought then that we were coming too slowly, so I gave the engine a puff of steam, and shut off again near the signal box, or between that and the splitting signals. My fireman kept tightening up the brake between the tunnel and the end of the platform, where he put it on as hard as he could. When we got under the verandah I thought we were going too quick, as we were not pulling up at all, so I reversed and applied steam. There was no time to whistle for the guard's brake, or to sand the rails. The speed at the platform end was five or six miles an

hour, and when I reversed, a little over four miles an hour. We had reduced to a little under four miles an hour when we struck the stops. I remained on my engine and so did my fireman. Neither of us were injured. No vehicle left the rails, and my engine was not damaged. The usual train is four vehicles, and we had seven on. The rails were dry. I think the accident was caused by the van brake not being applied. The foreman porter told me a few minutes after the accident that it was not applied, and that is the only way I can account for not having pulled up in time. I asked the guard if he had applied the brake, and he said that he had. I have been in the habit of bringing three or four trains a day into Fairlie pier station for one day each week during four weeks, and two days in the fifth week.

Andrew McMurtrie states: I have been over six years in the service, and nearly two years a fireman. I was fireman to James Buchanan on the 8th instant. I have nothing to add to his evidence, which is correct.

Alexander Inrie states: I have been over six years in the service as guard, and three years a spare passenger guard. On the 8th July I came on duty at 8 a.m. at Fairlie pier. I went to Glasgow with the 8.20 a.m. train and came back with the 10.30 a.m. from Glasgow. I was in charge of the portion for Fairlie pier, which is detached at Fairlie station. It consisted of four third-class and two composite carriages and a brake-van in which I was riding. The usual train is only three carriages and a brake-van. There were about 30 or 40 passengers. I applied my brake before leaving the tunnel, at the usual place. I put it on hard. It acted well but the wheels were not skidded. There was nothing unusual at all in the speed of the train. I did not think the speed was too high until the collision took place. My van was then outside the verandah. I do not think the speed was above $1\frac{1}{2}$ miles an hour. We were almost stopped. There was no rebound to speak of. I was not knocked over or hurt. No vehicles left the rails, but the second and third carriages were buffer-locked. One buffer-casting was broken. I saw three passengers who were injured. After the accident I saw the driver and said to him that "it was an awful mess he had made." He said he thought he could have stopped quite easily. A little while afterwards he asked me if my brake had been on, and I told him that it had been. The foreman porter, the ticket collector, and foreman porter's son, who is a newsboy, travelled in my van from Fairlie station. The foreman porter said nothing to me after the accident about my brake. He told Mr. Gray, the station-master, in the afternoon that he thought my brake had not been applied.

Hugh Sloan states: I have been over 14 years in the service, and foreman porter at Fairlie pier for over seven years. On the 8th July I was on duty, and came down from Fairlie in the brake-van of the Fairlie pier portion of the 10.30 a.m. train from Glasgow. There was nothing unusual in the speed of the train in coming from the tunnel mouth to the pier station. I had not any idea that there would be a collision. I jumped out of the van as soon as it was opposite

to the platform, and before the train had come to a stand, so as to prevent the passengers from getting out before the train stopped. I regularly do so. I ran forward and had passed the carriage in front of the van before the collision took place. I did not think there would be a collision even after I was on the platform. The speed was very low. It was about 10 or 12 miles an hour at the tunnel mouth, and about four or five miles an hour when I got out. I cannot say whether the guard's brake was applied or not. I did not see him in the tunnel as it was dark, and after we left the tunnel I was looking out of the window. I did not look at the blocks after the accident. I told the station-master that it was "my opinion" that the brake was not on, but I could not speak from actual knowledge from what I saw. I did not feel it go on.

Hugh McCall states: I have been about nine years in the service and ticket collector for about three years. I was in the brake-van of the train. I did not see the brake applied nor did I feel it. I saw the guard move the brake after the accident. He was turning the handle, but I cannot say whether he was putting it on or taking it off.

George Bell states: I have been nearly six years in the service and a signalman for over $5\frac{1}{2}$ years. On the 8th July I came on duty at 5 a.m. for 12 hours, in the junction signal-box. The Largs portion of the 10.30 a.m. train passed my box at 12.6, and the Fairlie pier portion at 12.8. There was nothing unusual in the speed. Steam was off. I cannot speak as to the brakes.

The following is a statement made to the officers of the Company by a porter who was travelling upon the engine, and who was not present at my inquiry:—

Andrew McCrindle, porter, states that he resides at the pier station, to which place he was proceeding for dinner, and he travelled on the engine of the 10.30 a.m. train ex Glasgow from Fairlie to Fairlie pier on 8th July. He thinks steam was shut off about the first shaft in the tunnel, but he cannot say whether steam was again applied to the engine before he left it. The tender-brake was applied while the train was in the tunnel, and was released after the train emerged from the tunnel, but it was again applied about the facing-points leading from the down line to No. 2 platform. He stepped off the engine about six yards before it entered the station roof, and at that time he had no thought that the train was going to strike the buffers. He cannot say whether the tender wheels were skidding or not when he stepped off, and at that time no special effort had been made by the driver or fireman to stop the train, and the engine had not been reversed, and apparently it had not then occurred to the driver or fireman that such means were necessary to stop the train at the proper place. When he stepped off the engine he proceeded back towards the railway buildings, where he resides. He heard the crash of the collision, and turned back, and remained a short time.

Conclusion.

From the foregoing evidence it appears that when approaching Fairlie pier station at about 12.10 p.m. the driver of the engine which was as usual taking the carriages to the pier from Fairlie station had his train perfectly under control after leaving the tunnel and passing the junction; that, thinking he was running too slowly, he applied a little steam and increased his speed; that it was not until he was within 70 yards of the buffer stops that he found out that he was running too fast to stop at the proper place at the platform; and that he then reversed his engine, but was unable to stop before striking the buffer stops. He did not whistle for the guard's brake to be applied, or instruct his fireman to sand the rails, and he cannot therefore be said to have used all the

means in his power to avert the collision, but I have no doubt from the evidence that the guard, either from forgetfulness or carelessness, had omitted to apply his brake at the usual place, and I consider that he is more to be blamed for the collision than the driver. The train was heavier than usual, consisting of seven vehicles instead of four, and this fact may have somewhat misled the driver.

Had the engine been properly equipped, the automatic vacuum brake, with which the train was fitted, would have been available, and the driver would have had no difficulty in stopping when he found out that he was running too fast after entering the station. I would recommend the Company to lose no time in fitting all their engines with the necessary apparatus, so that advantage may be taken when necessary of the continuous brakes on the carriages.

At the time of the collision the driver had been on duty for $6\frac{1}{2}$ hours, and the guard for $4\frac{1}{4}$ hours.

The Assistant Secretary,
(Railway Department,) Board of Trade.

I have, &c.,
F. A. MARINDIN,
Major, R.E.

Printed copies of the above report were sent to the Company on the 16th August.

GREAT EASTERN RAILWAY.

Railway Department (Board of Trade),
1, Whitehall, London, S.W.,

29th August 1889.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 12th instant, the result of my enquiry into the causes of the collision which occurred on the 9th instant, between Bishopsgate and Liverpool Street stations, on the Great Eastern Railway.

In this case, while the 1.52 p.m. empty carriage train from Stratford, due at Liverpool Street at 2.21 p.m., was standing on the up main line at the Liverpool Street bridge signals, waiting for one of them to be lowered, it was run into at the rear by the 10 a.m. passenger train from Norwich, due at Liverpool Street at 2.10 p.m.

Two passengers in the Norwich train have complained of injury.

In the empty train the guard in the rear brake-van was badly injured.

In the Norwich train, which consisted of engine, tender, and 14 vehicles (including three brake-vans and a horse-box) fitted throughout with the Westinghouse brake, the engine was damaged.

In the empty train, which consisted of a tank-engine and 12 vehicles, fitted throughout with the Westinghouse brake, the brake-van was badly damaged, and eight of the carriages slightly so.

A list of the damage is given in an Appendix.

Description.

The signals for giving admission to Liverpool Street station are situated on a bridge over the line about 90 yards on the Bishopsgate side of the cabin, from which they are worked, and which is near the entrance of the station. A train standing at these signals, whether on the up main or up suburban line, is well seen from the signal-cabin.

The Bishopsgate up main line starting-signal is about 345 yards from the Liverpool Street up home-signal, the Liverpool Street up main line distant-signal being close to this starting-signal and controlled by it. This up starting-signal can also be controlled by a lever in the Liverpool Street cabin, to protect a train standing at the bridge signals. Bishopsgate signal-cabin is on the down suburban line platform, about 70 yards on the Liverpool Street side of the up main line starting-signal. The tail of a long train standing at the Liverpool Street up home-signals can be seen from this signal-cabin.

The next up-signals are those worked from the East London junction cabin, the up main line home-signal (and the Bishopsgate up main line distant-signal, which is close to it) being about 430 yards from the Bishopsgate up main line starting-signal; this home-signal can be controlled by a lever in the Bishopsgate cabin for the protection of a train standing at the Bishopsgate up main line platform.

The line from beyond the East London junction is a deep cutting, and there is a sharp curve commencing about 75 yards on the Liverpool Street side of the Bishopsgate up main line starting-signal, so that but a very limited view can be obtained by a driver on the up main line of any train standing at the Liverpool Street bridge signals. With the exception of a falling gradient of 1 in 700, which extends towards the station for about 285 yards from a point 230 yards on the Liverpool Street side of the East London junction up home-signals, this part of the up main line is practically level.

The line is worked on the absolute block system, but the block needles at Bishopsgate and Liverpool Street cabin are kept at "Line clear," when no trains are in block. No train register books are kept in these cabins.

The collision occurred at a point 135 yards outside the Liverpool Street bridge signals, and 210 yards inside the Bishopsgate up main line starting-signal. The longest possible view of the tail of the empty train from the engine of the Norwich train did not exceed about 120 yards.

Evidence.

1. *Harry Eadie*, signalman; 10 years' service, eight years signalman.—I am a relieving signalman in the neighbourhood of London, and took up the duty in the East London junction cabin at 2 p.m. on the 9th August to remain till 10 p.m. The empty train passed into the Bishopsgate section on the up main line at 2.17 p.m., without having been detained at my signals. It was cleared at 2.18 p.m. At 2.20 p.m. I received the "Be ready" from Bethnal Green for the Norwich train. I gave "Clear" to Bethnal Green and lowered the up home-signal and distant-signal, the former of which is slotted from Bishopsgate, the slot having been taken off at the time (2.18 p.m.) at which I received "Clear." The train passed at 2.22 p.m., without having been detained at my signals. The Bishopsgate up main line distant-signal is close to my up home-signal, and is controlled by it. I do not know whether this distant-signal was off when the Norwich train passed it, as it is not in sight. I cannot see either the Bishopsgate up main line starting-signal or the Liverpool Street up main line distant-signal. There was nothing unusual in the speed of the Norwich train, which was not cleared before the collision, but was cleared about 4 o'clock.

2. *William Saunders*, signalman; 15 years' service, 13 years signalman.—I have been in the present Bishopsgate-Street cabin since it was opened about seven years since, and I came on duty there on the 9th instant at 2 p.m. to remain till 10 p.m. I got the "Train entering section" signal for the empty train at about 2.17 p.m., and put my needle over to "Train on line." My up main signals, viz., starting, home, and distant, were already off for this train, which passed about 2.19 p.m. After the train had passed into the Liverpool Street section, which had been clear some few minutes before the empty train passed, I took my slot off No. 6, the home-signal at East London junction, but kept the starting and distant signals (Nos. 7 and 5) at danger, and I cleared my needle to East London junction before getting any signal for the Norwich train. Liverpool Street did not clear for the empty train, but after it had come to a stand-still with its tail in sight of my cabin, Liverpool Street put the slot on my starting-signal (No. 7) to prevent my taking it off. At 2.21 p.m. I got the "Train entering section" signal for a passenger train on the up main line. I made no alteration either in the starting or distant signals, which were at danger so far as the levers were concerned, and I saw that No. 7 (the up starting-signal) was at danger. The electric repeater showed that No. 5 (the up distant-signal) was at danger. I put my needle over to "Train on line," and as soon as I saw the engine passing under the bridge by the up main starting-signal I knew that it was the Norwich train, and at the same time put back No. 6 lever to danger. I was surprised to find the train passing the starting-signal, where it ought to have stopped. I had not heard it

approaching this signal, as there was a down main line train in the station, the engine of which was blowing off steam. On finding the engine of the Norwich train passing beyond the signal at which it ought to have stopped, I ran to the window and shouted and threw up my arms as the engine was passing the cabin, at a speed of about 20 miles an hour. I could not see what was being done on the engine, as the down train was between me and it. The collision then occurred almost immediately, the tail of the Norwich train stopping nearly opposite my cabin. I am quite positive that my up starting and distant signals were at danger, and had been so since the empty train had passed them. The Norwich train passed at about 2.23 p.m., or about four minutes after the empty train. My up main line distant-signal is regularly used, and is only kept at danger when a train is standing between Bishopsgate and Liverpool Street. The normal position of my signals is "off." The Norwich train would have been between Bethnal Green and Bishopsgate when I lowered the up suburban line home-signal for a Woolwich train, which arrived directly after the collision, at about 2.25. I had no conversation with the driver of the Norwich train. The afternoon was fine. Immediately the empty train stopped, Liverpool Street put the slot on No. 7, which has an indicator in my cabin. This slot is not used by Liverpool Street unless trains are stopped outside the bridge signals at Liverpool Street. I have never known a case of two trains having been in the same section on either the up main or up suburban line since I have been in the cabin at Bishopsgate Street.

3. *Walter Day*, signalman; 27 years' service, 19 years signalman.—I have been employed in Liverpool Street cabin about 18 months, and came on duty there at 1.45 p.m. on the 9th to remain till 9.45 p.m. I was in charge of the main line side of the cabin, and Rawlings was on the suburban side. There was no one else in the cabin. I keep no train register. About 2.15 or 2.16 p.m. I got the "Train entering section" signal, for what I knew was an empty train, having received "Be ready" from Bethnal Green to that effect. I was not able to give it a clear road into No. 6 platform, where it had to go, as a Barking train, which is not due out till 2.20, was then in No. 6. I accordingly put over my needle to "Train on line," but moved no levers, lever A, which works a slot on the up main line starting-signal at Bishopsgate having been already over, as it is the rule to keep this slot off unless a train is standing between Liverpool Street and Bishopsgate. The distant-signal No. 1 was also at danger. This distant-signal is regularly used for admitting trains whenever it can be done. Immediately I sighted the engine of the empty train stopping at the bridge signals, I put back lever A into the position of danger. I have no repeater for this signal, but I have never had any report made about

it not working properly. I heard the collision about 2.22, after the Barking train had started; and after the engine had followed it out of No. 6, and just as this engine had cleared No. 14 points, and had come opposite to the engine of the empty train, so that I could set the road for the empty train, the collision occurred, driving forward its engine about an engine length. I heard no whistle before the collision. I have had no conversation with the driver of the Norwich train since the collision. On hearing the collision I turned round to Rawlings and said "I believe the Norwich train has run into the empty train;" he made some remark, and I then said "If it has you see my slot is on," or words to that effect. He said, "Yes, I see it is." I was standing beside No. 14 lever when I heard the collision. I had got the "Be ready" for the Norwich train from Bethnal Green about 2.19. The weather was clear on the afternoon of the 9th.

4. *Henry Rawlings*, signalman; 23 years' service, 17 years signalman.—I have been employed 12 years in Liverpool Street cabin, where I came on duty at 1.45 p.m. on the 9th to remain till 9.45 p.m. I was in charge of the suburban side of the cabin. I know nothing of what Day had been doing before the collision, nor did I hear it occur. At about 2.22 Day called my attention to the empty carriage train, saying that the engine had shot forward, and added, "You see my slot is on," pointing to lever A. He could not have put lever A to danger before speaking to me as he was near the middle of the cabin.

5. *Edward H. Walsh*, foreman porter; 17 years' service, 10 years foreman porter.—I have been employed all 10 years at Bishopsgate station, and I was on duty there on the 9th August when the collision occurred. I was nearly at the centre of the middle platform when the Norwich train ran through. I saw the empty train standing at the Liverpool Street bridge signals, and I knew that the Norwich train ought to have stopped at the up main line starting-signal. I was attending to the down Barking train, which was at the time standing at the down main platform, and so I could not take any means to attract the attention of the driver of the Norwich train, which was running past at a speed of 10 to 15 miles an hour, as if there was nothing in its way. Just before the Barking train started I had looked towards the signals and then noticed that the up main line starting-signal was at danger, and at this time the engine and four or five of the carriages of the Norwood train had passed the starting-signal. I had no conversation with the driver of the Norwich train just after the collision. I do not know of anyone who saw the starting-signal at danger before the Norwich train passed it.

7. *John Collerson*, driver; 24 years' service, driver 18½ years.—I commenced work on August 9th at Yarmouth at 7.15 a.m. I took the 8 o'clock train from Yarmouth to Ipswich, where I arrived at 9.50 a.m. I was engaged about the engine till 11.30 a.m., and I then became the driver of the 12.3 p.m. train from Ipswich for Liverpool Street, stopping four or five times on the journey, but running through from Chelmsford. My engine was No. 725, a 4-wheel (driving and trailing) coupled engine, with inside cylinders, and 6-wheeled tender. The train consisted of 14 vehicles, four carriages of soldiers having been taken off at Colchester, and four horse-boxes attached there. The brake power consisted of the Westinghouse brake applying to the coupled wheels of the engine, and to all the vehicles composing the train. We were five minutes late leaving Ipswich, lost four minutes at Colchester, and left Chelmsford nine minutes late, viz., at 1.36 p.m. We had a free run as far as Forest Gate, where we were checked, but not quite stopped by signal, and again at Maryland Point, and at Devonshire Street the distant-signal was against me, but I whistled it off. I got a clear run through Bethnal Green, found

the East London signals off, and also the Bishopsgate up main line distant-signal (the upper arm of the two) off, but the suburban distant-signal (the lower arm) at danger. The next signals to these were the up main line starting-signal at Bishopsgate and the up main line distant-signal from Liverpool Street; of these, the former was off, but the distant-signal was at danger. The up suburban line home-signal, which is on a bracket close to the up line starting-signal, was at danger; this is a lower signal than the other. From the state of the signals at Bishopsgate, I concluded the line was clear as far as the bridge signals at Liverpool Street. I had shut off steam at Devonshire Street, and opened the regulator for a few seconds after passing Bethnal Green junction, and my speed on passing the starting-signal at Bishopsgate was about 15 miles an hour; after this I checked my speed with the Westinghouse brake, intending to stop at the bridge signals. When just by the iron bridge the fireman, who was on the left-hand side of the engine, said, "Hold on mate, there is a train standing here." I then applied the brake with full force, the pressure being 80 lbs, and reduced the speed from about 15 miles to about 10 miles an hour on coming into collision with the tail of the empty train, which was at rest. I had stopped the train with the Westinghouse brake eight times on the journey, and it had acted very well on those occasions. I noticed that a down main line train was standing at Bishopsgate as we passed. I am certain I could not have mistaken the suburban home-signal for the main line starting-signal at Bishopsgate. I saw the signal off for me at Bishopsgate on passing the last London cabin. I did not whistle before putting on my brake. I was not hurt.

8. *Edward Jarvis*, fireman; 13 years' service, 10½ years fireman.—I have been Collerson's fireman about seven months, and was with him on August 9th. My place was on the left side of the engine. We left Ipswich about five minutes late, left Chelmsford about nine minutes late, were slacked at Forest Gate and Maryland Point, and on approaching Bishopsgate we found the signals off at East London junction, these being the up main line home-signal and up main line distant-signal worked from Bishopsgate. The next signals to these are those at Bishopsgate; the upper one of these was right for us, but the suburban one was at danger; these I saw just before reaching East London junction. The Liverpool Street distant-signal was at danger. We passed these signals at a speed of 10 to 15 miles an hour, and had got as far as the iron bridge, when I made sure that a brake-van, which I had just noticed a little before, was standing on the up main line. I called out at once, "Hold on, there is a train on the line." Collerson had checked the train before this, and then applied the brake sharp, and the speed was reduced from 8 to 10 miles an hour to 5 or 6 miles an hour on striking the van. I went to the hand-brake, and was applying it, when the collision occurred. Neither of us was hurt. A down train was just leaving Bishopsgate as we passed through. I have frequently worked trains on the up main line, and have been stopped at the Bishopsgate up starting-signal on previous occasions. I could not have mistaken the suburban for the main line signal.

9. *William Read*, guard; 34 years' service, 28 years guard.—I was head guard in charge of the 10 a.m. train from Norwich on the 9th August. At Ipswich, four carriages of soldiers were added to the train, which started at 12.8 p.m., five minutes late, consisting of 14 vehicles. At Colchester there was a further change made in the train, and again at Marks Tey, and from Marks Tey it consisted of brake-van, seven carriages, brake-van, horse-box, three composites, and another brake-van, 14 in all. I was riding in the front van. After sundry stops we left Chelmsford, seven minutes late, having next to stop at Liverpool Street. We were checked from Forest Gate to Stratford, and lost five minutes by signals.

On approaching East London junction I saw the main line up home-signal off, but I did not notice the Bishopsgate up distant-signal. I was then booking a statement, and did not see the up main line starting-signal at Bishopsgate. I did not know anything about the collision till I felt a sudden stop, which knocked me against the side of my van. I was not hurt to signify, and had not to leave work. The speed just before stopping was 14 or 15 miles an hour; the time of the collision was 2.23 p.m., about 14 minutes late. Directly after the collision the driver said the signal had been off for him.

10. *John Drake*, guard; 17 years' service, 13 years guard.—I was riding in the ninth vehicle of the 10 a.m. train from Norwich on the 9th instant. On approaching Bishopsgate I saw the East London up home main line signal off, but I did not notice the up main line distant-signal worked from Bishopsgate. I then saw the up main line starting-signal at Bishopsgate off, but I could not say what the suburban line home signal was showing; the distant-signal worked from Liverpool Street was at danger. The collision took me quite unawares; the speed just before having been 10 to 13 miles an hour. I had felt the brake put on just before. I was shaken and bruised, but I had not to leave duty.

11. *George Hobbs*, guard; 5½ years' service, four months guard.—I joined the 10 a.m. train from Norwich at Marks Tey on the 9th, and I was riding in the last vehicle, a brake-van. After leaving Bethnal Green I was sorting parcels and luggage, and did not see any of the signals at the East London junction.

After passing the East London junction I put my head out on the right-hand side, and I saw the Bishopsgate up main line starting-signal, which is at the London end of the up main platform off, and the one beside it and on a lower level, for the suburban line, at danger. I could not see the Liverpool Street up distant-signal for the smoke. The collision took me unawares, the speed just before it having been, as far as I can judge, 13 or 14 miles an hour. I was shaken and bruised, but have not had to leave my work. My van stopped opposite to the signal-cabin at Bishopsgate. I did not see the starting-signal thrown to danger after the engine had passed it.

12. *Herbert Marriage*, driver; 14 years' service, 2½ years driver.—I was driver of a train of 12 empty vehicles from Stratford on the 9th instant. I started at 1.52 p.m. with a tank-engine, running chimney first; the Westinghouse brake was working throughout the train. There was a guard in the rear vehicle of the train, which was a brake-van. We shunted at Devonshire Street and then got clear signals as far as the bridge at Liverpool Street, the up distant-signal worked from Bishopsgate being off. I arrived at the bridge signals at 2.19, and the collision occurred at 2.22, just as No. 6 line had been cleared for us to run into it. I felt a push behind which sent my engine forward about half an engine's length; the brake was off. I did not speak to the driver of the Norwich train, but my mate, Browning, who went back, told me he said that the signal had been off for him. I heard no crash when the collision occurred. I put on the Westinghouse brake.

Conclusion.

The evidence as to the cause of this collision is very conflicting. According to that of the signalmen in the Bishopsgate and Liverpool Street cabins, the driver of the Norwich train deliberately, in broad daylight, passed at danger the Bishopsgate up main line starting-signal, which was protecting (by the action of both signalmen, for it is worked by one and controlled by the other) the empty train standing at the Liverpool Street bridge signals, where its engine was in sight of Liverpool Street cabin, and its tail in sight of Bishopsgate cabin. The Bishopsgate signalman also affirms that the up main line distant-signal was at danger, which, of course, it must have been if the up main line starting-signal was at danger so far as he was concerned, as the latter signal precedes the former.

In confirmation of the signalmen's statements, the foreman porter at Bishopsgate saw the up main line starting-signal at danger, after the engine and four or five carriages of the Norwich train had passed it; this, however, is not conclusive evidence as to the signal having been at danger when the Norwich train was approaching it, as it might have been thrown to danger immediately the engine had passed it; and in Liverpool Street cabin, when the noise of the collision was heard by signalman Day, he turned to his mate, Rawlings, who has charge of the suburban side of the cabin, and said to him, "You see my slot is on" (alluding to the lever which controls the up main line starting-signal at Bishopsgate being in the position of danger), a remark which Rawlings confirmed. But here again it is possible the slot may have been put on after the engine of the Norwich train had passed the signal.

There are thus the two signalmen interested declaring that the starting-signal was at danger when passed by the Norwich train, their testimony being to a certain extent confirmed by that of a brother signalman and by a foreman porter.

On the other hand, the driver and fireman of the Norwich train are both positive that the Bishopsgate up main line distant and starting signals were *off* when they approached and passed them, the only signal they passed at danger being the Liverpool Street up main line distant-signal, indicating to them that they would have to stop at the Liverpool Street bridge signals, which they were quite prepared to do.

Of the three guards of the Norwich train, the head guard in the front brake-van noticed neither the Bishopsgate up main line distant nor starting signals, and was taken unawares by the collision. The guards in the ninth and rear vehicles did not notice the distant-signal, but state that they saw the starting-signal *off*.

There are thus, as regards the train, the driver, fireman, and two guards, all interested witnesses, and all declaring that the Bishopsgate up main line starting-

signal was *off*, and two of them (the driver and fireman) that the up distant-signal was also *off*.

With this equally balanced evidence it is hard to say upon whom the blame for the collision rests. The driver of the train is a man of excellent character, of 18½ years' service as driver, well accustomed to work main line trains in and out of Liverpool Street, and it is difficult to understand why he should on the present occasion have made so serious a mistake about an important signal, if it was at danger when he passed it. The signalmen on the other hand are experienced men of good characters, and with the empty train well in view, it is not easy to see why they should both have neglected to protect it, as would have been the case if the starting-signal were off. The signalmen had come on duty, one rather less, and one rather more, than half an hour before the collision occurred. The driver had commenced work at 7.15 a.m., and had therefore been on duty about seven hours when the collision took place. The fireman was in the best position, and the first to see the van of the empty train, and he appears to have realised what it was when from 80 to 90 yards from it, the speed being probably about 20 miles an hour. This is stated to have been reduced on collision to about 10 miles an hour by the application of the Westinghouse brake. With the Liverpool Street up main line distant-signal at danger, the driver should have been coming round the curve more cautiously than he appears to have been doing.

It is to be regretted that no train register is kept in the Liverpool Street and Bishopsgate cabins. These, beside their other uses, are often the means of throwing light upon cases otherwise obscure.

It is satisfactory to record that notwithstanding the very large number of trains passing in and out of Liverpool Street station in the course of the day, this is the first collision which has occurred between it and Bishopsgate, a circumstance reflecting great credit to all engaged in conducting the traffic.

It is on the other hand most unsatisfactory to be obliged to come to the conclusion that either the signalmen or the driver, fireman, and rear guards of the Norwich train, must have told deliberate lies with regard to the Bishopsgate up main line starting-signal, as there was no question as to this signal having been in good working order.

The Assistant Secretary,
Railway Department, Board of Trade.

I have, &c.,
C. S. HUTCHINSON,
Major-General, R.E.

APPENDIX.

PARTICULARS of DAMAGE to ROLLING STOCK in COLLISION near BISHOPSGATE on August 9th, 1889.

Engine (No. 725) of Norwich train.

Smoke-box front door and chimney broken, leading buffer beam bent and foot-plate torn up, leading buffers damaged, steam chest casing bent, front spindle gland studs broken, main steam pipe in smoke-box broken, valve lubricator and oil pipe broken, Westinghouse pipes leading end broken, right-hand leading spring shifted and pillar bent. Cost of repairs, 15*l*.

Date built.	Vehicles of Empty Train	Cost of Repairs.
		£ s. d.
1886	Brake-van, No. 178.—Under frame and body heavily damaged.	150 0 0
1887	Composite Carriage, No. 83.—Under frame and body damaged.	15 0 0
1885	Brake-van, No. 154.—One head-stock broken and two buffers bent.	2 10 0
1880	First-class Carriage, No. 376.—One head-stock broken and two buffers bent.	2 10 0
1887	Composite, No. 303.—One head-stock broken and two buffers bent.	2 10 0
1886	Composite, No. 360.—One head-stock broken and two buffers bent.	2 10 0
1889	Third-class, No. 5.—One head-stock and one buffer bent.	2 0 0
1886	Third-class, No. 22.—Two buffers bent and slight damages.	1 0 0
1880	Composite, No. 342.—Two buffers bent.	10 0
		178 10 0

Printed copies of the above report were sent to the Company on the 18th September.

GREAT EASTERN RAILWAY.

Board of Trade, (Railway Department,)
1, Whitehall, London, S.W.,

16th November 1889.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 25th ultimo, the result of my enquiry into the causes of the accident which occurred on the 15th ultimo, at Stepney junction station, on the Great Eastern Railway.

In this case the engine and vehicle next to it of the London, Tilbury, and South End Company's 5 a.m. up workman's train from Barking for Fenchurch Street left the rails of the up line at the junction crossing just after starting from Stepney station.

Seven complaints of slight injury have been received.

The train consisted of a 10-wheeled engine, having a four-wheeled leading bogie, four coupled wheels and trailing wheels with radial axle-boxes, running coal-bunk in front, and 16 vehicles, the first and last being brake carriages, with a guard in each, the Westinghouse automatic brake being fitted to the coupled wheels of the engine and to the wheels of all the vehicles. The whole of the wheels of the engine got to the wrong side of the diamond crossing, and were all on the down line when the engine stopped with its leading end about 25 yards from the diamond points, the wheels of the brake carriage next the engine having been dragged off the rails; but the next vehicle did not reach the diamond crossing, and neither it nor any of the vehicles behind it left the rails.

No damage was sustained by the rolling stock and no couplings were broken, but the brake-coupling between the engine and brake-carriage was pulled asunder.

In the permanent way one crossing-chair and two common chairs were broken.

Description.

At Stepney junction the London and Blackwall Railway is joined by the lines to and from Stratford. Between the junction and Fenchurch Street there are two up lines, one on each side of the down line, the one on the north side of the down line being called the third or right-hand up line. This line is connected only with the line from Stratford, there being facing-points near the up end of the up platform on the Stratford branch leading to it by a crossing through the down line. The curves (all right-handed, looking towards Fenchurch Street) of this crossing have radii of five chains, six chains, and nine chains, the latter including the diamond crossing at which the accident took place and terminating just beyond it, after which the right-hand up line becomes straight. The super-elevation of the outer rail of these curves is about $1\frac{1}{4}$ ins., and the gauge is easy, except at the crossing points, where it is a shade tight. The leads of the diamond crossings are 1 in 7, and the distance between the points is $3\frac{1}{2}$ ft. A check rail extends round the low rail of the curves and is carried up as close as possible to the crossing.

The permanent way is of a substantial character, and there is no reason to suppose that any thing gave way when the accident took place. About a fortnight before the accident a temporary slip road on each side of the diamond crossing had been put in to form a connection between the down line and right-hand up line. This slip road was secured to the same sleepers as those to which the diamond crossings are fixed. The slip road had been taken out when I visited Stepney on the 4th instant; it is said not to have in any way interfered with the diamond crossings, nor need it have done so.

The engine has a total wheel base of 29 ft. $7\frac{1}{2}$ ins., the distance between the centres of the bogie and driving-wheels being 10 ft. 4 ins.; between those of the driving and intermediate wheels being 8 ft. 6 ins., and between those of the intermediate and trailing wheels being 7 ft. 6 ins. The weight of the engine in full working order as originally constructed was 56 tons, distributed as follows:—

	Tons.
Bogie wheels -	16
Driving wheels -	16
Intermediate wheels -	16
Trailing wheels -	8
Total -	56 tons.

When weighed after the accident (with the same amount of coal and water in it as at the time) the mean of the weights when placed on the weigh-tables with the chimney in opposite directions was as follows:—

	Right.	Left.	Total.
	Tons.	Tons.	Tons.
Bogie wheels - - -	7·56	7·43	14·99
Driving wheels - - -	8·22	8·34	16·56
Intermediate wheels - -	7·90	7·90	15·80
Trailing wheels - - -	4·45	3·98	8·43
Total - - -	28·13	27·65	55·78

The wheels were all true to gauge and the flanges but slightly worn, those of the trailing-wheels having been turned up about four months ago. There was nothing to be seen amiss with the horizontal springs, which are of the ordinary character. In addition to these springs there are strong spiral springs on the axle of the trailing-wheels (which have a play of 1½ inches in each direction) these springs being intended to restore the wheels to their true position after they have travelled to the right or left in passing round curves, &c.

Evidence.

1. *James Quainton*, 19 years in the Great Eastern Company's service, 18 years signalman.—I have been 14 years in the Stepney junction cabin, where I came on duty at 10 p.m. on October 14th to remain till 6 a.m. on the 15th. I was alone in the cabin when the accident occurred. The first knowledge I had of the 5 a.m. train from Barking was receiving the "Train entering station signal" from Salmon's train at 5.19 a.m., the up line being then clear. I had previously made the road for it to run on to the right-hand up road. The train arrived at 5.20 a.m., and the engine stopped on the locking-bar of the facing-points, and it started at 5.20 a.m., having only to set down and not to take up passengers. The starting-signal, No. 21, was off for it. I had given the train on to Devonport street, and I was booking the time when it started, and the first thing I heard was the brake going on, and when I looked out from the London end of the cabin, I saw that the train was stopped, and about the fourth carriage from the engine was opposite the cabin; the engine was standing on the rails of the down line. I did not notice the position of the brake carriage, but the carriages in rear of it were on the rails of the crossing and up road. The up Blackwall line was the only one not fouled. The other lines were cleared about 7 a.m. No work had been going on at the place while I was on duty. The temporary slip road was not worked by a lever in the cabin. The last previous train to the up right-hand line was a Great Eastern goods train at 4.20 a.m. It passed all right. Nothing at all had gone wrong at this crossing while I was on duty since the slip road had been put in on the 4th. It was taken out on the 31st. The slip road had been tried for the first time on Sunday the 6th, and again on the 13th, to see if it was in proper running order.

2. *Mark Mitchell*, driver; 12 years in the London, Tilbury, and Southend Company's service, 2½ years driver.—I commenced work on the 15th October at Plaistow at 4.30 a.m., and went thence to Barking to be attached to the 5 a.m. workman's train for Fenchurch Street. My engine was No. 18, a 10-wheeled engine with a four-wheeled leading bogie, four coupled wheels, and radial axle trailing-wheels. I had a full load of coal and water. We ran chimney first to Barking, and thence coal-bunk first to London. I had on a train of 16 vehicles, including a brake carriage front and rear, with a guard in each. The four coupled wheels of the engine, and all the wheels of the vehicles were fitted with the Westinghouse

automatic brake. We left Barking punctually at 5 a.m., stopped at the four stations preceding Stepney, and started thence at 5.19 a.m. (one minute late, having lost a little time at Plaistow getting the passengers in) with the front of the engine close to the points. The brake had worked all right up to this, the pressure being about 75 lbs. After starting, I had hardly got into a speed of five miles an hour, and had just reached the point of the diamond crossing, when I felt the wheels in front of the engine, *i.e.*, the proper trailing-wheels, lift right up, and immediately after this another lift, and then the engine seemed to move along easily as if on the rails. I also felt a lurch when the coupled wheels took the wrong road. On feeling the first lurch I shut off steam, and applied the brake slightly, immediately after which it was put fully on by its automatic action having been brought into play by the brake coupling between the engine and brake carriage being pulled asunder. The engine went on a very short distance and stopped without any couplings being broken, but only strained. On getting down I found the engine with its whole 10 wheels on the down road, but how it had got there I cannot say. The brake-carriage next the engine was off the rails with the left-hand wheels outside the right rail of the down road, and the right-hand wheels inside the left-hand rail. The rest of the train was on the proper line. The engine was not damaged, but the draw-hook of the brake-carriage was bent. There were marks on the left-hand front wheel, and the wheel next it in the direction the engine was running. These marks were on the flange of the tyre. I had passed the place the previous Saturday night with a goods train about 11.30 p.m. with No. 8 engine, a similar one to No. 18, and running chimney in front, and I felt nothing wrong. I had not worked No. 18 engine for some time previously.

3. *Joshua Glover*, fireman; three years in the London, Tilbury, and Southend Company's service, six months fireman.—I am Mitchell's regular fireman, and was with him on October 15. I agree with his evidence, except that I think we stopped clear of the locking-bar at Stepney. Shortly after starting when the speed was very slow, I felt the engine begin to roll about, and then to get on to the rails. Mitchell shut off steam, and tried to put on the air brake, but as he was doing so the brake coupling between the engine and brake-carriage next it became disconnected, and the brakes went on. I had no time

to get on my hand-brake. No couplings gave way except the brake coupling.

4. *Thomas Anderson*, 29 years' service; 10 years ganger with the Great Eastern Company—My length extends from Shadwell to Burdett Road, including the Blackwall line near Stepney Junction. I arrived at Stepney about 5.50 a.m. on the 15th October, and was then informed that there had been an accident. Nothing had been touched when I arrived. The engine of the train was on the rails of the down road with all its wheels, but the brake-carriage next it was off the rails with all its four wheels more or less on the down road, but the remainder of the train was on the proper up road. At this time there was a temporary slip road, between the right-hand up line, and the Tilbury down line, the fastenings of this slip road being secured to the same sleepers which held the diamond crossing chairs. After the train had been removed from the diamond crossing I was unable to see any marks showing how the engine got on to the down line. The only mark visible was on the check rail on the platform side of the diamond crossing across the top of it, six or seven feet from the point. One chair was broken under the crossing, viz., the one next London, a C chair, the jaw of the left side of the chair being broken; after this, two common chairs were broken, this being the whole of the damage; there was no mark on the point of the diamond, and no rails were bent. The cant of the rail at the crossing was the same as now, viz., about $1\frac{1}{4}$ inches, and the gauge was about correct. The junction had

been put in about 12 months ago, when the timbers at the crossing had been all new, and long enough to take in a slip road. The slip road had not required any change in the check rail or diamond crossing, which is 1 in 7. It is a mystery to me how the engine could have got on to the down road. I am quite sure that the cant was the same now as then. The new keys must have been put in when the slip road was taken out on the 31st.

5. *George Hope*, 37 years' service, about 20 years foreman platelayer in the Great Eastern Company's service.—I was in charge of a relaying party, who put in the slip road at Stepney Junction on October 6. In putting it in, no interference whatever was made with the diamond point fastenings, no difference was made in the cant at the crossing. I reached the scene of the accident before 7 a.m. I heard that the engine had got on to the down line, where it was still standing. I gauged the road, and found it correct, but I did not try the cant. I could not see any marks on the rails to account for the accident, but I saw a mark across the top of the end of the check rail of the down road on the London side of the diamond point. I could not tell what made this mark. None of the check rails were disturbed; there were three broken chairs, one on the London side of the diamond point, next but one to it, and two common chairs on the London side of the first one, but separated from it. I could see no way to account for the engine having got to the wrong side of the diamond point. I never knew of a similar case to this.

Conclusion.

In this very singular accident, the whole of the wheels of a 10-wheeled tank-engine, after travelling about 50 yards from the place where it had stopped at Stepney junction station, took the wrong side of the diamond crossings of the right-hand up line and Stratford down line, and instead of proceeding along the up line came to a stand on the rails of the down line about 25 yards from the diamond points, the brake-carriage next the engine being dragged off the rails, but still coupled to it and to the vehicle behind it, which vehicle and the remaining 14 vehicles in the train were all on the rails of the right-hand up line.

The engine was running with the coal-bunker in front, the wheels under which have radial axle-boxes admitting a play of $1\frac{1}{4}$ inches to the right and left, there being powerful horizontal springs on the axle to keep the wheels in their true position when running on a straight line, the weight on these wheels being about $8\frac{1}{2}$ tons.

The curves of the right-hand up line from the place from which the engine started having radii of five, six, and nine chains in succession, and the super-elevation of the outer rail being necessarily small and only about $1\frac{1}{4}$ inches, the left leading-wheel of the engine (which was the proper right trailing wheel) would when passing round these curves be pressing strongly against the outer rail, thus forcing the right wheel against the inside of the right axle-box; there would be a sudden removal of this pressure upon the left leading-wheel reaching the open space, $3\frac{1}{2}$ feet long, between the diamonds points, and the action of the spiral spring on the axle would then be to throw the wheels over to the left; and, in the present instance, it did so sufficiently far to force the leading-wheels to the wrong side of the fixed points, the other wheels being then dragged in the wrong direction after them, the marks on the flanges of the left leading wheel and left wheel next it being made as these wheels were forcing their way to the wrong side of the fixed point. It is quite possible also that there may have been some imperfection at the time in the state of the diamond crossing, helping to facilitate the passage of the wheels of the engine to the wrong side of the fixed points. A temporary slip road (in connection with the renewal of an adjacent bridge) had been recently put in fastened to the same sleepers as those which were under the diamond crossings. This slip road, which had been removed (its use having been no longer required) when I visited the spot, ought not to have been brought into use without the sanction of the Board of Trade, and for this sanction the Great Eastern Railway Company, though generally very particular in this respect, had in this instance failed to apply.

This accident is I believe by no means the first one in which an engine running with radial axle-box wheels in front—the axle being provided with similar spiral

springs to those which this engine has—has taken the wrong side of the fixed points at a diamond crossing. If the London, Tilbury and Southend Company could see their way to running such engines (of which they have a large number) with the bogie always in front, it would no doubt be a great safeguard against the recurrence of a similar accident to the present one. Failing this they should in my opinion seriously consider what alteration they can introduce into the arrangement of the radial axle-box wheels so as to guard against the danger of these wheels taking the wrong side of the fixed points of a diamond crossing.

The Assistant Secretary,
Railway Department, Board of Trade.

I have, &c.,
C. S. HUTCHINSON,
Major-General, R.E.

Printed copies of the above report were sent to the Company on the 9th December.

GREAT EASTERN RAILWAY.

Board of Trade, (Railway Department),
January 20, 1890.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 17th ultimo, the result of my enquiry into the causes of the collision which occurred on the 13th ultimo at Fordham junction station, on the Ely and Newmarket line of the Great Eastern Railway.

In this case, during a dense fog, while the 6.15 p.m. down passenger train from Newmarket for Ely was standing at the down platform at Fordham station, where it was due at 6.28 p.m., it was run into at the rear by the 5.53 p.m. down passenger train from Cambridge for Mildenhall, due at Fordham at 6.26 p.m.

Two passengers in the Newmarket train, and one in the Cambridge train, were injured.

The guard of the Cambridge train was also injured.

In the Newmarket train, which consisted of a tank-engine and five vehicles fitted throughout with the Westinghouse automatic brake, the second, third, and fourth vehicles were knocked off the rails and some of them considerably damaged.

In the Cambridge train, which consisted of a six-wheeled tank-engine with four coupled wheels running with the coal bunk in front, and four vehicles (the one next the engine being a third-class brake-carriage with a guard), fitted throughout with the Westinghouse automatic-brake, no wheels left the rails, but some of the vehicles were damaged.

The collision occurred at 6.46 p.m.

Description.

At Fordham junction station the single lines from Newmarket and Cambridge unite at the up end of the station, and again diverge at the down end towards Ely and Mildenhall. The station has only two platforms, one for down and the other for up trains, and as passengers have frequently to change out of one branch train into the other, two down trains or two up trains are allowed to be at the platforms simultaneously, the second train being allowed to proceed from the next block station under the block signal "Section clear but junction blocked," stopped at the home-signals, and then hand-signalled in by the signalman, except in foggy weather, when a porter is stationed at the home-signals and pilots the train in after it has been stopped at the home-signals.

The down home-signal for the Cambridge line is 145 yards from the Cambridge end of the down platform, or about 225 yards from the rear of the Newmarket train, which, on account of the fog, had been drawn further down the platform than usual. The Cambridge line curves sharply as it approaches Fordham. It falls on a gradient of 1 in 500 till it reaches a point 110 yards outside the down home-signal, after which it is level into the station.

Burwell, the next block-signal station on the Cambridge side of Fordham, is $3\frac{1}{2}$ miles distant from it.

Evidence.

1. *William Bowers*, signalman; 15 years' service, 11 years signalman.—I have been employed 10 years at Fordham junction, where I came on duty at 3 p.m. on

December 13, to remain till 10.30 p.m. The down passenger train arrived from Newmarket at 6.26 p.m., two minutes before time; it stopped at the home-signal

as I was admitting a train from Mildenhall due at 6.25. The Newmarket train came into the station, stopped at the down platform opposite the shed and then drew further along. After the Newmarket train had arrived I asked the Quy signalman on the speaking instrument if he had heard anything of the 5.53 p.m. train from Cambridge, which was considerably overdue, and I got a reply that it had just left Quy; this would be about 6.30 p.m. I then got the "Be ready" for the train from Burwell at 6.36 p.m., and in reply I gave the block-signal "Section clear but junction blocked," because the Newmarket train was standing at the platform. I got the "Train entering section" signal at 6.40 p.m., and the first thing I heard of the train was when two fog-signals exploded near the home-signal at about 6.45½ p.m., and immediately after this came the collision, the train passing the cabin at 6.46 p.m. at a speed of seven or eight miles an hour, faster than trains usually run in, and striking the tail of the Newmarket train about 50 yards from the centre of the cabin. There was a fog at this time, which had come on suddenly about 6 o'clock. Two fog-signalmen, platelayers, had gone out about 6.5 p.m. one to the distant-signal in the Ely direction and the other to that in the Newmarket direction; but neither of the men for the distant-signals in the Mildenhall and Cambridge directions had turned up, nor did they appear at all that evening. A porter off the platform, named Boon, was attending to the home-signals, and he it was who put down the fog-signals over which the Cambridge train ran. There was no other train to come in either from Cambridge or Mildenhall after this train. When the collision occurred, the Mildenhall up train was standing at the station, waiting for the staff from Burwell to arrive. At this time I could not see the light of the starting-signals towards Ely and Mildenhall, which are about 90 yards off, but I could see the lights in the rear vehicle of the Newmarket train, distant about 50 yards. The wheels of the Cambridge train were skidding when they passed the cabin, and the engine was reversed with steam on; but the rails were very greasy, and the brakes did not seem to take effect.

2. *William Boon*, porter; five years' service, three years porter.—On the evening of December 13, the station-master instructed me to fog-signal at the home-signal on the Cambridge line, and the signalman told me to go there at 6.42 p.m.; in foggy weather the Cambridge train is always stopped at the home-signal and piloted into the platform, and I was intending to pilot it in on this occasion. I went up to the signal and got there about 6.43 p.m., and put down two fog-signals on the left rail about 10 yards apart, the nearest one about 50 yards from the home-signal, and I then took up my position about 40 yards from the home-signal, from which place I could just see the light of the home-signal, which was red. I could not see this light from the fog-signals. I knew there was no one fogging at the down distant-signal. I had been standing a short time when I heard the passenger train coming at a faster speed than usual. As the engine approached I waved my hand-lamp, which was showing a red light, but I do not think it was seen from the engine before the fog-signals were exploded, directly after which I heard the wheels skidding, the train passing me at a speed, I judged, to be 50 miles an hour. I did not shout to the driver as the speed was so fast that I was sure he would not hear me. I thought there would be a collision. I ran after the train and found that one had occurred. I did not speak to the driver of the train after the collision.

3. *Samuel Thurlborne*, platelayer; six years' service.—My post as fog-signalman was at the Fordham junction distant-signal towards Cambridge. I left work at 5.0 p.m. on December 13, and went home to Burwell, where I live, as I could not get a house nearer Fordham. My length extends from Fordham to Burwell, about 3½ miles. I reached home about 5.15 p.m. I noticed the fog coming on about 5.50 p.m.,

and as the Cambridge train was due to leave Burwell at 6.20, I knew I could not report myself at Fordham and reach the distant-signal before the train passed it, and there was nothing else to come from Cambridge that night. I consequently did nothing. I lived only five minutes from Burwell station, but it did not occur to me to go there and inform the station-master or the driver of the Cambridge train that there would be no fog-signals at Fordham distant-signal.

4. *Edward Warrington*, station-master at Fordham; 18 years' service, five years station-master at Fordham.—I was on duty on December 13. The fog came on suddenly at about 6 p.m., and in consequence four fog-signalmen, platelayers, ought to have reported themselves for duty at the four distant-signals. Only two turned up, those for the Cambridge and Mildenhall distant-signals not appearing. The former lives at Burwell and the latter about 1½ miles from this. I instructed porter Boon to attend to the home-signals under the direction of the signalman. It is necessary to bring two trains to the same platform, and when this is done, the second train is brought on under the block-signal "Section clear but junction blocked"; the train is then stopped at the home-signal and hand-signalled in by the signalman; but in foggy weather the train is piloted in by the fog-signalman stationed at the home-signal, and this was to have been done in the present instance. I knew that there was no man fogging at the distant-signal, and I sent the Newmarket train further down the platform than usual, but it did not occur to me to wire to Burwell that there was no fogman at the distant-signal. Just before the collision occurred I was on the down platform, standing at the rear of the Newmarket train, on which there were three red lights. On hearing the Cambridge train run over the fog-signals I knew it was coming too fast and I ran forward to try and get the attention of the driver of the Newmarket train, but I did not succeed in doing so, and when the collision occurred I was standing near the middle of the Newmarket train. It was not moved more than a yard ahead, and I thought the brakes must have been on, but the driver afterwards said they were not. I had no time to get the passengers out of the train. There were from 15 to 20. The guard was standing on the platform. I could not say what the speed of the Cambridge train was, but I think it may have been 15 miles an hour, and I do not believe the driver would have stopped at the end of the platform. There were five vehicles in the Newmarket train, and the second, third, and fourth were just moved off the rails. There was no separation of the train. No vehicles left the rails in the Cambridge train. One woman was slightly hurt in the latter. The driver of the Cambridge train said just after the collision he did not know where he was. Later on he said he had his train under control at the pump-house, (by the end of the platform), but that after that the engine gave way. He appeared perfectly sober. There would have been no difference in the hand-light shown at the distant or home-signal. The Newmarket train as a rule arrives before the Cambridge train, and is due away before it. The rails were very greasy at the time of the collision. I could see that the engine was reversed and was beating. I did not see any sand on the rails, except within five or six yards of the tail of the Newmarket train. At 6.30 p.m. I could see signal lights about 90 yards off, and after this I think the fog became rather thicker.

5. *William Precious*, driver; 30 years' service, 29 years driver.—I commenced work on December 13th at Mildenhall at 7.10 a.m., to remain on to 7.30 p.m., leaving work at Mildenhall. My engine was No. 84, a six-wheeled engine, four wheels coupled, the leading and driving wheels. On the journey from Cambridge I was running coal bunk first and the train consisted of four vehicles; a third-class brake next the engine, a third-class carriage, a composite, and a third-class carriage; the Westinghouse brake applied to the four

coupled wheels of the engine, and to our wheels of each of the vehicles. There was also a screw hand-brake for the engine and brake carriage. We were late starting from Cambridge, owing to the down train being delayed by fog, and left at 6.14 p.m., 21 minutes late, stopped at five stations, Burwell being the last one. The brake had been acting well at these stops and I had not overrun any platforms. We left Burwell between 6.39 p.m. and 6.40 p.m., still about 20 minutes late, the fog being very thick. I had run over no fog-signals at Burwell distant-signal, but I had been able to see it. I had received no information at Burwell about no man being stationed at the Fordham distant-signal. The fog was worse as we neared Fordham than it had been at Burwell. The only landmark near the distant-signal is some trees near a stream, and these I could not see on account of the fog. I do not think I was running faster than 28 to 30 miles an hour after leaving Burwell. On approaching Fordham I did not look at my watch, but was trying to make out where I was, when I ran over two fog-signals, the speed being about 25 miles an hour, steam being still on. On first hearing the fog signals go off I thought it was at the distant-signal, but directly afterwards I caught sight of the home-signal on the Newmarket line, and then I knew that I was at the home-signal and not at the distant-signal. I shut the regulator and put the brake full on (pressure 75 lbs.), and I think I had done this just on passing the home-signals. I saw the fog-signalman waving a red light just as I passed over the fog-signals, and I reversed the engine and gave it steam 20 or 30 yards after passing the facing points, but had no time to open the sand-box, and the fireman had jumped off I do not know where, but I found he was gone when I stopped. The speed on collision was not more than five or six miles an hour. My engine stopped nearly dead, but there was hardly any gap between it and the brake-van of the Newmarket train. No wheels left the rails in my train, and the train remained coupled. I attribute the bad stop to the rails being greasy. The engine wheels did not skid at all, but I think the wheels of the vehicles did so. I did not release the brake at all, nor did I whistle. By what I said to the station-master about the engine "giving way" I meant that it began slipping.

6. *Thomas Allen*, fireman; seven years' service, two years fireman.—I am Precious's regular fireman, and I was with him on December 13th with the 5.53 p.m. train from Cambridge. I agree with the driver's evidence. At about the scissors crossing I got down on the engine step on the 6-ft. side and jumped off about the end of the platform when the speed was about 12 miles an hour. I fell forward on my chest but was not hurt. I did not apply my hand-brake, and had not the presence of mind to open the sand-box.

7. *Robert Deeks*, guard; 26 years' service, 14 years guard.—On the 13th December I was guard of the 5.53 p.m. passenger train from Cambridge for Mildenhall. It consisted of an engine and four vehicles, the first of which was a third-class brake-carriage in which I was riding. We started at 6.10 p.m., 17 minutes late, waiting for the down train, due at 5.47, which was detained by fog, and arrived at about 6.4 p.m. We were detained about three minutes between Cambridge and Burwell junction, and after this we lost one minute in running between Quy and Bottisham, and left Burwell 21 minutes late, viz., at 6.41 p.m. We had not overrun at any of these stops; the Westinghouse brake only had been used for stopping. I did not hear anything said at Burwell about a man being out at the Fordham distant-signal. After leaving Burwell the fog became so thick that though I looked out several times I could not even see the driver and fireman on the engine, and I saw nothing of the distant-signal nor of any of the ordinary landmarks. The first thing I heard was two fog-signals explode, at which time the speed was between 25 and 30 miles an hour. I thought at first we were at the distant-signal, but on feeling the twist of the brake in going over the points I knew it must have been the home-signal. I thought I had felt the driver shut off steam just before the fog-signals exploded, and I felt the brake go on before getting to the points, when the air all left the gauge. The speed was reduced to seven or eight miles an hour on collision. I tried to get the hand-brake on at the points, but had not time. I was at the brake when the collision occurred. I was knocked down and slightly hurt, and was off duty for half a day. The collision occurred at 6.47 p.m.

Conclusion.

This collision—in which a down passenger train from Cambridge for Mildenhall ran into the rear of the down passenger train from Newmarket for Ely, which latter was standing 225 yards inside the Fordham junction home-signal, or 265 yards from the spot at which Precious, the driver of the Cambridge train, acknowledges that he knew the home-signal was at danger—must be primarily attributed to Precious having lost his way in the dense fog which had come on suddenly, about three-quarters of an hour before the collision. Precious states that after leaving Burwell, $3\frac{1}{2}$ miles on the Cambridge side of Fordham, the fog became very dense as he approached Fordham and that he was unable to see the usual landmarks; that when he ran over two fog-signals he at first thought they were at the Fordham distant-signal, but on immediately afterwards catching sight of the home-signal for the Newmarket line (close to that on the Cambridge line) he realised that he was at the home-signal and not at the distant-signal; that he at once shut off steam and applied the brake with full force, and thinks he had done this as he passed the home-signal, his speed having been about 25 miles an hour; but that notwithstanding this and that he reversed his engine and gave it steam after proceeding another 40 or 50 yards, he was still running at a speed of five or six miles an hour when his engine struck the tail of the Newmarket train, standing about 225 yards inside the home-signal. Precious attributes the bad stop to the greasy state of the rails; no sand had been applied, as his fireman had jumped off some distance before the point of collision, and he says he had not time to apply it himself.

Precious must have considerably under-estimated the speed at which he travelled between Burwell and Fordham, which speed he says never exceeded from 25 to 30 miles. The distance being about $3\frac{1}{2}$ miles and the time of running between Burwell and the Fordham home-signal $5\frac{1}{2}$ minutes, the average speed would be nearly 40 miles an hour, and this was certainly not a judicious speed to be approaching a junction station, with the knowledge that the station was not clear. Precious must therefore I think be

blamed for having approached Fordham station at an injudiciously high speed considering the dense fog prevailing. Precious is a driver of 29 years' service as such, and had come on duty at 7.10 a.m., to remain till 7.30 p.m. (a longer day's work than is desirable) and had been on duty about 11½ hours when the collision occurred.

The collision would probably have been prevented had there been a fog-signalman attending to the Fordham distant-signal on the Cambridge line. A platelayer named Thurborne ought to have been there; he had left work at 5 p.m., and gone home to Burwell, where he lived, not being able to get a house at or near Fordham. He noticed the fog coming on at about 5.50 p.m., but as the Cambridge train was due to leave Burwell at 6.20 p.m., he knew he could not report himself at Fordham (3½ miles distant,) in time to reach the distant-signal before the train passed it, and as this was the last train that night, he concluded to do nothing. He could at any rate have gone to Burwell station (only five minutes' walk from his house) and have told the driver of the Cambridge train that he would not find any fog-signals at the distant-signal, and he certainly ought to have done this.

I think also that the Fordham station-master, when he found that the platelayer had not arrived to fog-signal at the distant-signal towards Burwell, should have at once telegraphed to Burwell to that effect. He says that it had not occurred to him to do so, and for not having done so he is more to be blamed than the platelayer, as more intelligent conduct is to be expected from a man in the position of station-master than from a platelayer.

The sudden incidence of this fog again points to the importance of some trustworthy mechanical appliance which can be brought into action before fog-signalmen can get to their posts. It also shows the necessity of railway companies providing houses for their platelayers if they cannot obtain lodgings within a reasonable distance of their work.

The Assistant Secretary,
Railway Department, Board of Trade.

I have, &c.,
C. S. HUTCHINSON,
Major-General, R.E.

Printed copies of the above report were sent to the Company on the 8th February.

GREAT NORTHERN RAILWAY OF IRELAND.

Board of Trade, (Railway Department,)
1, Whitehall, London, S.W.,
8th July 1889.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 13th ultimo, the result of my enquiry into the causes of the very terrible collision which occurred on the 12th ultimo near Armagh station on the Newry and Armagh branch of the Great Northern Railway of Ireland.

In this case a heavily laden excursion train of Sunday school children and others, consisting of engine, tender, and 15 vehicles, including a brake van in front and a brake carriage in rear, fitted throughout with the non-automatic vacuum brake, due to leave Armagh for Warrenpoint at 10 a.m., failed quite to reach the top of the rising gradients of 1 in 82 and 1 in 75 which commence about .29 mile from the buffer stops at the end of the platform of the Newry and Armagh station at Armagh, and extend for 3.15 miles; the train was then divided between the fifth and sixth vehicles from the engine to enable it to be taken on in two portions, but the rear 10 vehicles, having been inadequately secured, ran back towards Armagh and met at a high rate of speed—about 1½ miles from the spot from which they had commenced to move backwards—the 10.35 a.m. ordinary passenger train from Armagh, which had started about 20 minutes after the excursion train and was being stopped, although it was still running at a speed of (probably) about five miles an hour, when the collision took place.

The effects of the collision were most disastrous, the rear three vehicles of the excursion train being completely destroyed, their débris being thrown principally to the right of the direction in which they had been running, down the slope of an embankment (about 46½ high) on which the railway is here carried. On the collision occurring, the engine of the ordinary train—which consisted of engine and tender, horse box, brake van, three carriages, and third class brake van, fitted with the non-automatic vacuum brake—was separated from its tender and thrown over to the right upon its right side (left wheels uppermost) on to the top of the slope of the embankment. The

rear five vehicles broke away from the horse box, ran back down the incline, and were stopped by the guard in the rear brake van applying his hand brake after they had run back about a quarter of a mile. The tender and horse box also ran back and were stopped by the driver—who, upon the crash occurring had turned round and was holding on by the tender coal plate—applying the tender hand brake (which had remained in working order) a few carriage lengths short of the rear five vehicles.

Up to the present time no less than 78 deaths of passengers (of whom 22 were 15 years of age and under) in the excursion train have taken place, and in addition to these, 260 passengers (of whom about one-third are 15 years old and under) are returned as having been more or less seriously injured.

Two passengers (of whom there were 14) in the ordinary train have complained of slight injury.

The rear guard of the excursion train and the fireman of the ordinary train were injured, the former having had a marvellous escape.

A list of the deceased passengers, the composition of the excursion train, and a list of the damage to rolling stock are given in an Appendix.

Description.

The Newry and Armagh line was opened as a separate undertaking in August 1864, and was absorbed by the Great Northern Railway Company in 1879. It is a single line 21 miles long, worked on the train staff and ticket system, the train staff stations being Newry, Goragh Wood, Market Hill, and Armagh. There is an intermediate station, not a staff station, between Market Hill and Armagh, called Hamilton's Bawn, nearly five miles from Armagh. At the time the line was opened, the block system had not been made a requirement in the working of new lines, and it has not hitherto been introduced on this line.

The gradients, &c. of the line between Armagh and Hamilton's Bawn, commencing at the buffer stops at the end of the Newry and Armagh platform at Armagh, are as follows (*see diagram*):

Horizontal	-	-	-	-	-	·29 miles.
Rising 1 in 82	-	-	-	-	-	·66 "
Rising 1 in 75	-	-	-	-	-	2·49* "
Horizontal	-	-	-	-	-	·03 "
Falling 1 in 80	-	-	-	-	-	·90 "
Falling 1 in 800	-	-	-	-	-	·25 "
Falling 1 in 85	-	-	-	-	-	·26 "
Horizontal	-	-	-	-	-	·03 "

Hamilton's Bawn Station - - - 4·91 miles.

The curves and straight portions between the two stations are as follows, commencing again at the buffer stops at Armagh :

Straight	-	-	-	-	·06 miles.
Curve to left, 1 mile radius	-	-	-	-	·07 "
Curve to right, ·18 mile radius	-	-	-	-	·07 "
Curve to right, ·22 " " "	-	-	-	-	·09 "
Straight	-	-	-	-	·17 "
Curve to right, 1 mile radius	-	-	-	-	·14 "
Straight	-	-	-	-	·30 "
Curve to left, 1 mile radius	-	-	-	-	·30 "
Curve to right, 1 " " "	-	-	-	-	·27 "
Straight	-	-	-	-	·21 "
Curve to right, 1 mile radius	-	-	-	-	·53† "
Straight	-	-	-	-	·71 "
Curve to left, 1 mile radius	-	-	-	-	·49‡ "
Straight	-	-	-	-	·58 "
Curve to right, 1 mile radius	-	-	-	-	·72 "
Curve to left, 1 " " "	-	-	-	-	·20 "

Hamilton's Bawn Station - - - 4·91 miles.

* The train stopped ·12 mile, and the collision occurred 1·62 miles from the termination of this gradient.

† The collision occurred ·39 miles from the end of this curve.

‡ The train stopped ·09 mile from the end of this curve.

The excursion train came to a stand about 12 mile from the top of the rising gradient of 1 in 75 or 3.32 miles from the buffer stops at Armagh and near the termination of the curve to the left of 1 mile radius and .49 miles long. The collision occurred on the gradient of 1 in 75, as nearly as possible 1.5 miles from where the vehicles commenced to run back, or 1.82 miles from the buffer stops at Armagh Station. The line at this place is carried on a high embankment about 46½ high, on the Newry side of which there is a deep cutting and a curve to the right; and it was in this cutting when, as nearly as could be judged, some 500 yards off that the runaway portion of the excursion train was seen from the engine of the ordinary train, the collision occurring after the ordinary train (the speed of which had been reduced from about 25 miles to five miles an hour on collision) had run about 100 yards, while the runaway vehicles had passed over a distance of about 400 yards.

Evidence.

1. *Patrick Murphy*, driver; 31 years' service, 20 years driver; with the Newry and Armagh Company until 1879, when the line was purchased by the Great Northern Company. I have been driver since 1869 on the Newry and Armagh Railway. I commenced work at 8 a.m. on the 12th June, and brought in the 8.40 a.m. train from Newry to Armagh, where I arrived at 9.50 a.m. The rails were dry on the incline leading to Armagh. I started back for Newry at 10.39 a.m., four minutes late, waiting for the arrival of a train from Belfast. My engine was No. 9, a six-wheeled engine, with the leading and driving wheels coupled, and a six-wheeled tender. The train consisted of a horse-box, brake-van, three carriages and a brake-van with a third class compartment. The vacuum brake was fitted to the four coupled wheels of the engine, to all the wheels of the tender, and to four out of six wheels of the rear five vehicles, there being pipes under the horse-box. I tested the brake before I started, and could get about 20 inches of vacuum. There were about 20 passengers in my train. I had the train staff on the engine. Nothing unusual occurred on the journey until the fireman, who was on the right hand side of the engine, called out "Hold! hold! hold!" this was near the nineteenth mile post (*i.e.*, two miles from Armagh), and my speed at the time was from 25 to 30 miles an hour. I first whistled, then shut off steam on myself seeing the carriages coming back, next applied the vacuum brake with full force; the fireman reversed and applied back steam. By these means the speed was reduced to between two and three miles an hour, when the carriages, of which the speed was high, ran into the engine. I did not jump off, but turned round and caught hold of the coal plate of the tender, standing on the tender foot-plate; the tender at once broke away from the engine, and ran back with the horse-box attached to it for about a quarter of a mile, when I stopped them with the tender brake which was still working. The five vehicles had broken away from the horse-box and ran back in front of the tender and horse-box, and were stopped by the guard's brake three or four carriages' lengths from the horse-box. On the collision taking place, the engine turned over on its right side, and remained with its right side lying on the slope of the bank, just foul of the nearest rail. The tender gave a great lurch on the engine breaking away from it, but did not leave the rails. The fireman jumped off to the right just before the crash, and rolled down the slope of the bank; not much of the debris of the runaway vehicles came on to the footplate, and the wreckage went principally to the left. I did not look at my watch when the accident occurred, but it must have been about five minutes after starting. The morning was fine and dry. I have driven No. 39 engine, which is a sister engine to No. 86, the one which drew the excursion train. I have never taken more than 10 vehicles up the Armagh Bank with it. With No. 9 engine, I have taken a train of 17 vehicles, consisting of five carriages and 12 cattle waggons and horse-boxes. I had seen the excursion train start, and thought it was

a heavy train, and passed the remark to my fireman that I thought our engine could pull it up the bank. I have taken excursion trains myself, consisting of 14 vehicles with engine No. 82A, which is a heavy engine; I never stuck on the Armagh Bank. On the runaway carriages colliding with the engine, it stopped dead and quivered, but did not run back at all before turning over.

2. *William Herd*, fireman, 14 years' service, eight years' fireman. I have been working all the time on the Newry and Armagh line. I have been with Murphy six or seven years. I started with the 10.35 a.m. train from Armagh for Newry on the 12th June, my place being on the right side of the engine. We started about four minutes late. Nothing unusual took place till near the 19th mile post, and when running at a speed of between 20 and 30 miles an hour, I caught sight of something coming back in the cutting. Upon seeing this I called out to the driver, "Hold." He opened the whistle, shut off steam, came to my side to see what it was, then applied the vacuum-brake with full force. I reversed the engine and applied steam when the driver was on my side, and before he applied the vacuum-brake; the sand-boxes were not opened. The speed was reduced to less than five miles an hour when the crash took place, just before which I jumped off to the right and rolled down the bank, spraining my ankle a little. Not much of the wreckage came down on my side. I thought at first it was the whole train coming back. The speed seemed very high. The morning was fine and dry at this time. Murphy passed the remark to me before the excursion train started that it was a heavy train, but he thought our engine could take it up the bank.

3. *Daniel Graham*, guard; 29 years' service; guard 25 years, in the first instance, with the Newry and Armagh Company, and since with the Great Northern Company. I was guard of the 10.35 a.m. train from Armagh to Newry on the 12th June. The train consisted of engine, tender, horse-box, guard's van, three carriages, and a third-class brake carriage, six in all. The vacuum-brake was fitted throughout, except to the horse-box, which had a pipe only. We started at 10.38 a.m., three minutes late, waiting for some luggage from a Belfast train due at 10.21 a.m. I was in the rear brake carriage. The first intimation I had of anything unusual was from the driver whistling, about the over bridge near the 19½ mile post, the speed being about 20 miles an hour at the time. I applied my hand-brake at once, but I think the vacuum-brake was on before I did so, and I was merely able to take an extra turn or two to the brake wheel. I then looked out on the left side of the brake-carriage, saw some vehicles coming back, and saw one person jump out, and then came the crash, which knocked me down senseless for a few seconds. When I recovered my senses, I found my brake-carriage was running back down the incline, at a speed of perhaps five miles an hour. I at once

applied the hand-brake and stopped the train a short distance on the Newry side of the over-bridge. The tender and horse-box were separated from the rest of the train, and stopped three or four carriages length from the front vehicle. I do not know what time the collision occurred. I was able to give assistance afterwards to the injured, and have not had to go on the sick list.

4. *Thomas McGrath*, driver; 13 years' service, two years driver, six years fireman; all the time in the Great Northern Company's service. I commenced work on the 12th June at 5.30 a.m., with engine No. 86, a six-wheeled engine, with the driving and trailing-wheels coupled, with inside cylinders, and a six-wheeled tender. The engine is fitted with the vacuum-brake, working blocks on each of the driving and trailing-wheels, and on each of the tender-wheels. I am a spare driver, and work different engines, according to circumstances, and have worked No. 86 engine some two dozen times. My first work was to bring down the train of empty carriages, which afterwards formed the excursion train, from Dundalk. I started at 6.40 a.m., and arrived at Armagh at 8.35 a.m.; I turned the engine, got water, and then waited for the train to start at 10.0 a.m. After turning and getting to the Newry end of the train, I put 13 vehicles on the up-platform main line, and a brake-van and carriage on the down-platform line; when these latter were loaded, I crossed the road with them, and took up seven of the 13 vehicles which were on the up-platform line; I pulled-up with these nine vehicles about 100 yards, crossed with them into the Newry and Armagh yard, pulled forward on the Newry and Armagh main line to allow room for the remaining six-vehicles to be attached to the rear of the train; these six vehicles were then moved on to the Newry and Armagh line, and I then backed on to them. When the train was ready to start, it consisted of engine and tender, brake-van, 13 carriages and a brake-van or carriage, 15 vehicles in all. The brake power consisted of the vacuum brake, applying to the engine and tender, and to four wheels on each of the vehicles composing the train. The train then started at about 10.15 a.m. with a guard, front and rear. I had never been a driver on the Newry and Armagh line previously, but I had been a fireman on it with a ballast train, about five years ago, for six months, and on excursion trains for three years in succession, the last year being 1886, since which time I have not been on the line between Armagh and Goragh Wood. On finding that my train was to consist of 15 vehicles, I informed the station-master that I should not be able to take them, as I had got instructions at Dundalk that there would be only 13. The station-master replied "I did not write those instructions for you"; I said "Mr. Cowan wrote them." The station-master then said "Any driver that comes here does not grumble about taking an excursion train with him." I replied "Why did you not send proper word to Dundalk, and I should have a proper six-wheel coupled engine with me." I said no more, but walked away down the platform, this was about 10 minutes before the train started. I had great confidence in the engine I had, and thought I should be able to get up the bank with the 15 vehicles. We then started with about 130 lbs. of steam, the blowing off point, and we got on slowly till near to the top of the bank, not more than a few yards from it, gradually losing speed the whole way, but having still 125 lbs. of steam when the engine stopped. I made no attempt to start after the train stopped, feeling it would be useless. We had stopped two or three minutes, when Mr. Elliott, Mr. Cowan's chief clerk, who was on the foot-plate, said he would divide the train; to which I said "All right." Mr. Elliott then went away to the rear brake-van, and I saw him standing on the step of the rear van before the train was divided, and I saw also assistant-guard Moorhead putting down stones under the wheels of the rear vehicles, on the left side, also before the train was

divided. Moorhead then came running to me and said "Hamilton's Bawn"; this was after he had uncoupled the train, before which I had not set back. I had felt the pulling asunder of the brake-pipes when Moorhead uncoupled them, and my engine went back about a foot or so; I think the screw-coupling must have been released before the brake-pipes were detached. Immediately after this, I heard Mr. Elliott shouting "Slack up" meaning that I should set back on the rear of the train. I looked back, and did so, Moorhead going back to hook-on, but in doing so he fell down on the side of the line; on recovering himself, he ran on towards Armagh, I still following down, but Moorhead could not overtake the rear portion of the train, which ran away from him altogether, Mr. Elliott being on the step of one of the carriages. I followed the runaway part of the train, and was about a quarter of a mile from it when the collision took place. I had kept it in view till just the last. I do not think its speed ever exceeded 30 miles an hour. I did not see anyone jump from the runaway carriages as they were going down. Mr. Elliott was the first person to suggest dividing the train. I did not object, thinking the rear brake-van would hold the rear portion. I am sure the stones were put down before the train was divided. I saw no one go back to protect the rear of the train, but supposed the guard would have done so. I knew the regular train was due to leave Armagh at 10.35. I do not think my speed, on ascending the bank, ever exceeded five or six miles an hour. It was about 10.35 a.m. when we stopped, up to which time the speed had been gradually decreasing. I think my engine would have mastered 13 vehicles well. I cannot account for the rear vehicles running back, except from the weight of the train on the rear van.

By the Company's Officers.—I was doubtful about my engine being able to take 15 vehicles up the bank. I did not ask for any assistance. Mr. Elliott asked me if I wanted assistance, and I said, "I think my engine will take them up." I had brought 14 empty vehicles from Dundalk to Portadown, and a 15th was put on at Portadown.

5. *Henry Parkinson*, fireman; three years' service; nine months fireman. I am McGrath's regular fireman. I was fireman of No. 86 engine, and brought the empty train from Dundalk to Armagh on the 12th June. We had 14 vehicles from Dundalk, and took on a 15th at Portadown, and reached Armagh about 8.40 a.m. The train was ready about 10.15 a.m., and it then started, consisting of 13 vehicles, a brake-van next the engine, and a brake-van or carriage at the rear of the train, with a guard in each brake. Mr. Elliott was on the footplate with me and McGrath. Before starting, McGrath spoke to the station-master, and said that he had instructions from Mr. Cowan to take only 13 carriages. The station-master said there would be 15, as there were too many passengers for 13. McGrath said if there were 15 he must have an assistant engine to help him up the bank. The station-master said he had no assistant engine. Some further conversation passed on the subject, but it ended by McGrath starting with the 15 vehicles. Before this a shunter had told McGrath that some of the carriages were to be taken by the regular train at 10.35 a.m. I do not know why this arrangement fell through. After starting we got on pretty well at first, but about two miles from Armagh the speed gradually became less, and at last we stopped altogether a short distance from the bridge at the top of the bank. We had about 125 lbs. of steam on starting, and about the same when we stopped. The only reason I could see for our stopping was the curve in the line. I then had some duties to attend to which prevented my hearing what passed between Mr. Elliott and McGrath. On coming back to the footplate, I found that Mr. Elliott had gone, and McGrath told me that the train had been divided, and that the rear portion was running away.

Before this I had not heard Moorhead say to the driver "Hamilton's Bawn." McGrath then followed the rear portion of the train down the incline, and stopped about a quarter of a mile from the point of collision.

6. *William Moorhead*, porter; six years' service. Watchman at Newry four years and a half. One year and a half porter. I commenced work on the 12th June at Newry about 8.15 a.m., and came in the van by regular train to Armagh. I had left duty on the 11th at 8.15 p.m., after 12 hours' duty, with an hour off for dinner. I have acted as assistant guard about twelve times between Newry and Armagh; and on the 12th June I was sent from Newry to assist on the excursion train from Armagh to Warrenpoint and back. Mr. Elliott instructed me to go in the front brake-van from Armagh, as assistant guard. I accordingly went in the front van, in which there were eight soldiers and two civilians with me. I think the train started about 10.15 a.m. The train mounted the bank slowly, not exceeding eight miles an hour, and this gradually diminished till we stopped near the top of the bank, just before this there having been a little rain. I do not know if the steam had sunk down. I put on my brake when the train stopped, and remained in the van for a few minutes, and I then saw Mr. Elliott near the rear van speaking to the rear guard. He then came back to about the fifth carriage and waved to me. I went down to him, and he said he was going to cut the train. He asked me how many carriages Hamilton's Bawn siding would hold. I told him I was not sure, as I did not know how many waggons were in it, but that it might hold five. He then told me to unhook at the rear of the fifth vehicle, and gave me the same instructions a second time. I got in between the fifth and sixth vehicles, and first uncoupled the vacuum pipes and put them on the stops. No movement of either portion of the train took place on my doing this. I then unhooked the two side chains, and then unscrewed the screw coupling, it being sufficiently slack for me to do so, and lifted the shackle off the rear hook of the fifth vehicle. Before unscrewing I had put in one small stone behind the front left wheel of the sixth vehicle. Mr. Elliott then told me to go ahead gently to Hamilton's Bawn, and hurry back with the engine if the siding would hold all five vehicles. I went up to the driver on the left side, and said "Hamilton's Bawn, go ahead gently." I then jumped into the van, took off the brake, and felt my van coming back 12 or 18 inches, which I thought was from the driver setting back before starting, and it must have been this backward movement that set the rear portion of the train in motion, as it had been quite steady until this time. I looked out to see what had happened, and I saw the rear portion beginning to move back. Mr. Elliott signalled to me to come back, upon which I told the driver that the rear part was running back, and asked him to come back gently, so that I might hook on again. The driver, who was just moving ahead, stopped. I then jumped down on the left side, and ran towards Armagh, and tumbled down twice (there being some rails on the ground) on my way, and never succeeded in reaching the sixth vehicle, the speed of the rear portion increasing as I followed it. The front portion of the train passed me, and I tried to get on, but could not succeed, and I followed the train on till I came to where the collision took place, passing the front portion of the train a short distance from it. I do not know what Mr. Elliott had done to prevent the rear portion of the train from running back, except that I supposed the rear guard's brake had been put on. I did not make any objection when Mr. Elliott directed me to uncouple. I have never before acted as guard with so heavy an excursion train, nor when a train has been divided on the bank.

7. *Thomas Henry* (examined in hospital), porter at Dundalk, and acting occasionally as relieving guard,

nine years' service; acting as relieving guard for three years, and sometimes before that when acting as shunter. I came on duty at 6 a.m. on the 12th June, having been on duty the previous day from 8 a.m. till 7.30 p.m., with an interval of an hour for dinner. I left Dundalk at 6.40 a.m. on the 12th with an engine and 14 vehicles to form the excursion train from Armagh to Warrenpoint. We went via Portadown, where we put on an extra carriage by direction of the station-master. The train reached Armagh at 8.45 a.m., and there a first class carriage was substituted for the third class, which had been put on at Portadown. At first McGrath told the station-master he would be unable to take more than 13 vehicles up the bank, but I have no personal knowledge of anything that passed as to assisting the train up the bank. I had received instructions from Mr. Cowan's office on the previous evening to take charge of the train from Dundalk till it got back. The train was ready to start about 10.15, and I took my place in the rear van, which consisted of three compartments, one for passengers, one for luggage, and one for me. There was a hand-brake on the van, which I had not occasion to use at all till the train stopped on the bank, and I had no knowledge whether it was in good working order. In my compartment and the luggage compartment there were about 14 or 15 persons, two of whom were children, and there were about 20 in the other compartment. There were a few baskets of provisions. The train started all right, and attained a speed of about 15 miles an hour, which gradually diminished till we stopped near the top of the bank. I put on my hand-brake as soon as the train stopped, and I did not notice the vacuum brake applied. Mr. Elliott then came down in about three minutes, and told me to apply my brake, which I told him I had already done. He then told me to get out and scotch the wheels with stones. I did so, and had put one stone under each of the six van wheels, and also under the three right wheels of the vehicle in front of the van, and as I was putting down the last stone, I felt the carriages coming back. I went on the van, and got in, and tried, with the assistance of two passengers to get an extra turn at the brake handle, and was still doing this when Mr. Elliott jumped up on the left step, and said try and make the best you can without breaking it (meaning the brake handle), and I said I could make no more. He then said, "Oh, my God, we will be all killed," and jumped off. The speed then gradually increased, till it became so fast we could not see the hedges as we passed. I was still in the van when the crash took place. I had not seen the engine of the regular train till we came on to it. I remember no more till I came to my senses in the infirmary. Mr. Elliott did not tell me he was going to divide the train, but I suspected it. I had intended to go back after scotching the wheels; I had flags and fog signals with me for the purpose. I saw one man jump from the van, he was not killed. I had nothing to do with locking the doors before the train left Armagh. I had locked the right-hand doors at Dundalk, and these had remained locked till the train reached Armagh, and what was done afterwards was the act of the station officials after checking tickets. There was a countryman putting stones under the wheels after the train had begun to move back; this moving back must have been caused by the engine slacking back to ease off the coupling. I could make nothing more of the brake than I did at first, even with the assistance of the two other men.

8. *James Elliott* (examined in prison), 23 years' service: I was first an office boy in the service of the Dublin and Belfast Junction Railway Company; I was then gradually promoted from step to step in the office at Dundalk, and when the Great Northern Company took the line, I was second clerk in the general manager's office at Dundalk. I succeeded to my present post of chief clerk about 10 years since. Almost every other day during the summer months of these 10 years I have had charge of excursion trains to various places,

accompanying them out and home. Sometimes one and sometimes three times in each summer I have had charge of excursion trains from Armagh to Warrenpoint, and also from other stations on the Newry and Armagh line. I have had, I think, as large, or almost as large, a number of excursionists as on the present occasion, and as many as 16 or 17 vehicles between Armagh and Warrenpoint. This would be three or four years since, when the engine would have been a six-wheels coupled engine. I believe the application on this occasion was for a train of 14 vehicles, the engine power being left to the locomotive department. I arrived at Armagh at about 9.50 a.m. on the 12th June, and I then found the whole train, consisting of 13 carriages and two vans, standing at the up main line platform for Clones; the train was then loaded, with the engine at the Goragh Wood end. I walked along the train, and saw that it was well filled with children and adults all mixed together, and some people still getting in. I noticed that the checkers were locking the doors on the right hand side of the train, as it would proceed to Goragh Wood. This is usually done with excursion trains, to prevent unauthorised persons getting in after the tickets are checked. Coming back from the rear of the train, I met Mr. Foster, the station-master, and I said the train seems pretty well filled; he said, "Yes, I had to give out more tickets this morning, and I wanted to put on more carriages, and the driver refused to take them." I said I thought he would be the better of assistance for what he has got, and Mr. Foster at once sent shunter Hutchinson to tell driver Murphy to be ready to assist the excursion train up the bank. I shortly after went and asked McGrath if he wanted assistance, and he said he did not. I knew that he had a four-wheel coupled-engine on his train, and though I thought he had his load, I did not press him to have assistance, thinking he was a better judge than me of the power of his engine. I do not know that I have had any previous experience of the power of an engine like No. 86 for drawing a heavy train up the Armagh bank; but two years ago, I think, a bogie-engine, No. 19, four-wheels coupled, took up an excursion train of 14 vehicles without any special difficulty. Some shunting had to take place to get the train on to the Newry line, and we were able to start at 10.15 a.m. by my watch. I rode on the engine, McGrath and Parkinson being the only other persons on it; they appeared both fit for their work, with no appearance about them of having taken liquor. It is my usual custom with these excursion trains to travel on the engine, there being a guard in each of the vans, the rear guard, Henry, being in immediate charge. I considered Henry an experienced man, as though not a regular guard, he is constantly acting as guard, particularly with special trains. Moorhead has also acted as special guard with cattle and other trains, but he is not a regular guard. The train made a good start, with, I think, 130 lbs. of steam. I did not see the vacuum brake tried. The engine did very well till it passed Derry's crossing (near the nineteenth mile post) where it began to lose speed, without any apparent cause, and continued to do pretty well till it had got to within 300 or 400 yards of where it stopped, and then the speed gradually diminished till the engine stopped about 200 yards from Dobbins Bridge, at 10.33 a.m. by my watch, the pressure being just below the mark which, I believe, represents 125 lbs. I do not think the driver applied the vacuum brake when we stopped, but he may have done so without my noticing it. I consulted the driver as to what was best to be done, and he said I will take a portion of the train to Hamilton's Bawn, and return for the remainder. I thought this was the best thing to be done, as Hamilton's Bawn was only about a mile off. I then at once went along to the rear van and said to Henry, "put on your brake tight," he said, "it is on." I asked if he had any sprags, he said he had not. It was not his duty to have them in a passenger train van, but I thought he might have had some. I then said, "put some stones behind the wheels as we are

"going to take a portion of the train to Hamilton's Bawn," and I saw Henry come out of the van on the left side, the side I was on. I then ran back to the front of the train, called Moorhead, and asked him how many carriages Hamilton's Bawn siding would hold; he said, five, he thought, but he had noticed two waggons standing there when he passed in the morning. I said take five with you, and if there is not room, bring the front van back. I then told him to uncouple the train between the fifth and sixth vehicles. I did not see him put a stone under the front wheel of the sixth vehicle; he first uncoupled the left side chain, then the vacuum pipes, and then either the screw coupling or right side chain, I cannot say which he did first. At first he could not get off the screw coupling by easing the screw a little, and I then made him unscrew to the full length, and he was then able to get the coupling off without much difficulty, and without the engine being set back, it being my object to prevent this by letting Moorhead unscrew to the full extent. After the severance had been made, both portions of the train remained at perfect rest; I then told Moorhead to tell the driver to go straight away and on no account to come back against the carriages, and he went up to the driver; I then went down towards the rear van for the purpose of myself going towards Armagh with signals to protect the train, and I had almost got to the van when I saw the buffers driven in and heard the grinding of the carriages going over the stones, and I made up my mind that the driver must have set back against the rear portion of the train. The van began to move back also when the pressure from the buffers came against it. I at once tried to put stones behind the wheels, and put down three or four, but they were simply crushed by the wheels, and I then jumped on to the left step of the van of which I noticed the wheels revolving, and not skidding at all, and shouted to Henry to put on the brake tightly. He said he could make nothing more of it. I saw that he and another man were both working at the handle. The speed by this time had reached 20 miles an hour. I jumped off the van, and fell down, and ran up towards the driver, who was coming down after the train. I said, "My God! what did you come back against the carriages for?" And he said he could not get started, and set back the slightest thing. I then got on the engine and followed the runaways down until stopped by the gateman at Derry crossing, and I neither saw nor heard the collision. I calculated that I should save time by dividing the train, instead of waiting to be assisted by the regular train. From what I saw I believe the brake of the rear van must have been out of order. After the carriages started I saw two or three men about the line, putting down stones. I saw no pieces of wood lying about to use as sprags, and it did not occur to me to try and use the old rails. I was fully under the impression that the van break would hold the train, otherwise I would not have divided it.

9. *James Park*, locomotive superintendent of the Great Northern Railway of Ireland, stationed at Dundalk. I was informed of the collision at Armagh at 11.40 a.m. on the 12th June, and I proceeded to Armagh via Portadown at 12.10 p.m. with a break down train. I arrived at the scene of the accident at 2.10 p.m. and found that the tender and whole of the 10.35 a.m. train had arrived in Armagh Station. The tender was slightly damaged, but none of the vehicles, and I heard from the guard that a horse in the box next the tender was not injured. I first found the engine of the 10.35 a.m. train lying on the right slope of the bank on its right side, left wheels uppermost, foul of the right rail. The third carriage from the rear of the excursion train was lying on the main-line alongside the engine on its floor, with its Armagh end on the ballast, and its other end tilted up on its wheels, which remained in the axle-boxes. The roof of this carriage was still in position, but the compartments were all swept away with the exception of the end one next

Goragh Wood. The fourth carriage from the rear was off the rails, with its body nearly intact, on its wheels with another pair of wheels (probably from the third carriage) under its trailing headstock. The fifth carriage from the rear was off the rails, with its wheels between rails which had spread, one quarter-light broken. The sixth carriage from the rear (a first-class) was in a similar position to the fifth, and not damaged. The seventh carriage from the rear had one trailing-wheel off the rails, one window broken, and the back rail of seat broken. The three remaining vehicles were on the road, and undamaged. All the couplings remained undamaged and tight, except those of the two destroyed. The first and second vehicles from the rear were completely destroyed and the wheels shot down the bank on left side. No vehicles seem to have got past the engine of the 10.35 a.m. train. *Engine No. 86* was, in my opinion, fully equal to take a train of 13 loaded vehicles between Armagh and Newry. It is one of the largest of this type of engine in the Great Northern Company's service. I was not at Dundalk when the special train was ordered, nor did I know anything of its running till the accident was reported to me shortly after its occurrence. In my absence the whole of the arrangements were made by running shed foreman William Fenton, who has occupied that position at Dundalk during the 8½ years I have been there.

10. *John Foster*, station-master, at Armagh; 35 years' service; 12 years station-master at Armagh. I was on duty on the morning of the 12th June, and had charge of the arrangements connected with the excursion train for Newry, due to start at 10 o'clock with about 940 passengers, children and adults. To hold these, there were required 13 vehicles and two brake-vans, one of which, the rear one, had one passenger compartment. From my knowledge of the traffic, I considered that engine No. 86 was quite well able to take these 15 vehicles up the Armagh Bank. On McGrath's arrival from Dundalk with the empty train, I was going to make his train up to 16 or 17, but he declined to take more than the 15 he had brought from Dundalk, and I told the shunter to give him no more. It had not been at all in my mind to transfer any of the 15 vehicles to the 10.35 a.m. ordinary train. On the arrival of the empty train I had instructed the shunter to attach a first-class carriage to it, but, on the shunter proceeding to do this, McGrath objected to its being added to the 15, so the rear third-class carriage from Portadown was removed, and the first-class substituted for it. The train started at 10.15 a.m., with a train ticket, full throughout, and the 10.35 a.m. train followed with the staff. Mr. Elliott, after going round the train, said it had better be assisted up the bank, upon which I gave the driver of the 10.35 a.m. train instructions, through the shunter, to be ready to do so; but two minutes before the train started, Mr. Elliott told me that he had been speaking to McGrath, who said that he did not want assistance. There was a very slight shower shortly after the train started. I have no knowledge as to the cause of the engine of the excursion train stopping where it did. I could not say whether the doors of the excursion train were locked on both sides from my own knowledge, but I do know that the manager of the excursion train desired that this should be done. It is a common practice to do this with children's excursion trains. I cannot speak positively as to the number of passengers in the train, but it could not be more than 941, and of these, roughly speaking, two-thirds would be children up to 15 years of age, and one-third adults. I think that, of the 600 children, or thereabouts, 150 would be under five years of age. The line is worked on the train staff and ticket system, Market Hill being the first staff station, 10 minutes being the interval for one passenger train following another, 20 minutes for a passenger train following a goods train, and five minutes for a goods train following a passenger train. I gave the driver, McGrath, the ticket, and I had the

staff in my hand a second before this. I think I have sent as many, if not more, vehicles than 15 in previous excursion trains, but this would have been with a six-wheel coupled engine; but I could not be certain of the greatest number there have been taken by a four-wheel coupled engine, though I am pretty sure that 12 carriages filled with police and two vans have been taken from Armagh towards Newry by a four-wheel coupled engine. I remember one case of an engine failing to draw its train up Armagh Bank, and then it came back altogether. This was a train of 18 waggons of cattle drawn by a single engine.

11. *Robert Ballantyne*, platform porter; five years' service; all the time at Armagh. On the morning of the 12th June, I was asked by Mr. Pixon, one of the superintendents of the Sunday school excursion, to lock the doors of the carriages after checking the tickets, to prevent people getting in who had no tickets. I accordingly locked them on the right side, but I cannot say whether they were locked on the left side. They were not locked by me or the other man, who was checking tickets. There was sitting room for all I saw; fourteen or fifteen was the largest number I saw in any compartment.

12. *James Hutchinson*, shunter; 14 years' service; all the time shunter at Armagh: I was engaged making up the excursion train on the 12th June. I heard McGrath tell Mr. Foster, the station-master, that, if he put on any more carriages than what he had, he might send for another engine. Mr. Foster told me to put on no more. I had been going to put on two more, as there seemed to be want of room. When Mr. Elliott came, he went along the carriages, and seeing them so thronged, he said to Mr. Foster that they would be the better of a shove up the bank, so Mr. Foster told me to get Murphy's engine ready. I accordingly went to Murphy and told him, and he was prepared to push the excursion train when it started. Mr. Elliott then went to McGrath and asked him if he wanted a shove up the bank, and he said he did not, and I then told Murphy he would not be required. I have seen as many carriages and waggons before taken up by a similar engine, but not so many carriages only that I remember. I had no misgivings in my own mind as to the engine taking the carriages up on this occasion.

13. *Thomas McShane*, carriage examiner: 27 years' service, 19 years carriage examiner at Dundalk. I examined the whole of the 14 vehicles of the excursion train before they left Dundalk on the morning of the 12th. The van which was destroyed was No. 250. It had six open wheels, and a hand-brake working two blocks on each of the outside wheels. The blocks were also connected with the vacuum brake. I think the van weighed 11 tons. About a week or 10 days before this, I had examined the blocks on the van, and they were in good working order. I could not take up a hole to increase their efficiency. The van had made one run after this. I next saw the van on the excursion train at Dundalk, and saw that the blocks were skidding for a distance of about 80 yards along the down platform. The brake had been put on by the watchman, and had not yet been released by guard Henry when I noticed it skidding. This was the last time I saw the van. When at Armagh, on the 21st, I saw the carriage examiner there and he said that when he saw the excursion train with a strange driver, fireman, and guard, he jumped into No. 250 van to try the brake, and found the brake in perfect working order, and that the van did not move when two or three shunts were made against it. The frames of No. 250 van and of the two vehicles in front of it were sound.

14. *William Pearson*, carriage examiner; 11 years in the service, 5½ years examiner under the locomotive department, and 3½ years at Armagh: I saw the

excursion train on Wednesday 12th June, and examined all the carriages and the two vans, and found them all right. I got into the front van a short time after the empty train arrived here, and put the brake on. I found it acted properly when I put it on. When the train was formed to go to Warrenpoint, this van was in the rear. I saw driver McGrath set back against the carriages to get over the points into the Newry yard, and I noticed the buffer-rods went in at the front of the train, showing that the brake of the van was holding. I was at the front of the train near the engine when he did this.

15. *William Fenton* foreman of running shed at Dundalk Junction; 28 years' service, 11 years foreman of running sheds: I have been two and a half years in my present position. On the 11th June I was acting for Mr. Park during his absence from Dundalk; Mr. Clifford was the next in position to Mr. Park, but it being a shop holiday, the shops and offices were closed, and he was away; and it was a recognised thing that I took the duty. At about 11 a.m. I was told by the running shed fitter that an excursion train was to run on the following day from Armagh to Warrenpoint and back, and I sent him to Mr. Cowan's office to get the instructions with regard to the train and the number of carriages of which the train was to consist. He was told that there were to be 10 third class carriages, 1 composite carriage, and 2 brake vans; 13 in all. I had already told Driver McGrath he was to take the train, having no other man for the duty, and McGrath made no objection in any way, and I was not aware he was not well acquainted with the road. About the same time (11 a.m.) I selected No. 86 engine for the excursion train, this being the usual engine employed for such purposes, and I had no doubt whatever about its being able to take the train of 13 vehicles over the Newry and Armagh line. I did not know the line myself, but I knew that a similar engine had run a similar excursion train, consisting of 14 vehicles, two years previously with Driver Beattie. McGrath having made no objection whatever, left me to think he knew the road well. I have always had an idea that one of the brakes must have been meddled with in the ascent of the bank. I saw McGrath about 5.15 p.m. on the 11th, and I asked him if he had all his tools, &c. ready for the special train next morning, and he said "Yes."

Driver Murphy recalled: About 10 o'clock shunter Hutchinson came to me and said I should have to

put the excursion train over the bank. I asked who sent him, and he said the station-master, upon which I said "all right." I was prepared to do this, but when the excursion train was ready to start, I got another message from the shunter that I was not wanted; and shortly after the station-master told me the same thing. If No. 86 engine had failed, I would have taken the train up with my own engine if there had been no assistance to be got at the station, but I should have asked for help if it had been possible to get it. On consideration, I remember that there were light whiffs of rain about the time when the collision took place.

Driver McGrath recalled, after witnessing the running of the experimental train on the 22nd June: Supposing the weight of the train in to-day's experiment was the same as on the 12th, the only reason I can give for the engine to-day being able to get over the bank is that the engine was steaming somewhat better. In the yard, just after starting, the engine slipped a couple of times; but after this it did not slip at all. The rails were perfectly dry where I stopped on the bank. I knew it was no use trying to start again after stopping. The use of sand would have been rather adverse to starting than otherwise, as the engine had not been slipping. After stopping I applied the vacuum brake, getting a vacuum of between five and six inches, and kept it on until Moorhead uncoupled the brake pipe. I then put it on again before starting, and released it to start when told to do so by Moorhead. In starting I did not slack back so much as was done to-day at the experiment. My fireman kept firing as we ascended the bank. I kept my engine in full forward gear all the way up the bank. There had been a slight shower before I started, but the heat of the rails had soon dried the effects of it. On starting, the steam pressure was 130 lbs., and was 125 lbs. when we stopped. Nothing passed between Mr. Elliott and me about waiting for the regular train to help us over the bank. After, in the first instance, stating that the 15 vehicles would be too much for my engine to take up the bank, I, after further consideration and talking the matter over with Mr. Elliott, consented to take them. I commenced following the runaway vehicles after they had gone about 100 yards, opening my whistle as soon as I started, and keeping it open for a considerable time. I again opened it when entering the cutting before reaching the level crossing, where I was stopped by the gateman.

Conclusion.

The above being the evidence taken by me in connection with this most appalling collision, I will now proceed with the aid of this evidence, of the personal investigation made on the spot, and of any further facts brought out at the coroner's inquest and magisterial inquiry, to give a brief history of the circumstances attending it, to endeavour to assign the degree of culpability which attaches to the various parties concerned, and to point out the means which might be adopted to guard, as far as possible, against the recurrence of any such catastrophe.

It appears then, that on the 11th ultimo, the locomotive department at Dundalk was asked to supply sufficient rolling stock for the conveyance of a party of about 800 people, of whom the majority were Sunday school children, from Armagh to Warrenpoint and back, via the Newry and Armagh Railway, and the Newry and Warrenpoint Railway. In the absence of Mr. Park, the chief locomotive superintendent, and of his assistant (it being a holiday in the Dundalk locomotive shops), the arrangements connected with the train devolved upon the running shed foreman, Mr. Fenton, and acting upon his instructions, engine No. 86, and a train of 14 vehicles, was despatched at 6.40 a.m., from Dundalk to Armagh via Portadown. The driver in charge was Thomas McGrath, a man of 13 years' service, six years a fireman, and two years a driver; he had never been a driver on the Newry and Armagh Line, but had acted as fireman on it, with a ballast train for about six months, five years ago; and for three years in succession, up to 1886, as fireman with excursion trains; the guards with the train were two porters, William Moorhead and Thomas Henry, of six and nine years'

service, both accustomed to act as assistant guards with excursion trains on the Newry and Armagh Line. On the train reaching Portadown, another vehicle was attached to it, and it reached Armagh, at about half-past eight on the morning of the 12th June. In consequence of insufficient platform accommodation for the whole train, along the Armagh up platform, 13 vehicles were left along it, and two were put alongside the down platform to be loaded. As soon as this was accomplished, a certain amount of shunting had to be gone through, for the purpose of placing the whole train, now consisting of engine and tender, brake van, 1st class carriage, seven 3rd class, 1st class, three 3rd class, and 3rd class brake van, (15 vehicles in all), on the Newry and Armagh Line, between which and the main line (with the object of avoiding facing points) there is no communication except by means of an exchange siding between the two lines; this having been done, the train was now ready to start in charge of Mr. Elliott, chief clerk in the traffic manager's office at Dundalk. He has been 23 years in the service, first of the Dublin and Belfast Junction Railway Company, and then that of the Great Northern Railway Company, and has gradually risen from the post of office boy, to that of chief clerk, which he had attained to about 10 years' since. During these 10 years, he has been engaged almost every other day in the summer months, in taking charge of excursion trains, having conducted them between Armagh and Warrenpoint, sometimes once and sometimes three times in each season. On looking along the train at Armagh, previously to its starting, and seeing the number of vehicles and passengers, he remarked to the station-master, that it had better be assisted up the bank, and a message was in consequence sent to Murphy, the driver of the ordinary train due to leave at 10.35 a.m., to be ready to assist the excursion train with his engine. Shortly after this, Mr. Elliott had a conversation with driver McGrath, about being assisted up the bank, and on the latter saying that he did not want assistance, the order to Murphy was unfortunately countermanded. Before this conversation, driver McGrath says that he had informed the station-master that he could not take more than 13 vehicles, but that on further consideration he felt such confidence in his engine that he thought he would be able to take up the whole 15 vehicles.

The excursion train then started at 10.15 a.m., a quarter of an hour late, with Mr. Elliott, driver McGrath, and fireman Parkinson on the engine, porter-guard Moorhead and ten passengers in the brake van next the tender, and porter-guard Henry in the third class brake van at the rear of the train, there being 14 or 15 persons (including two children), in the luggage and brake compartments of this van, and about 20 persons in the other compartment. Fair progress was made for the first two miles, but then the speed gradually became less and less until the engine finally came to a stop, about $1\frac{1}{4}$ miles further on, within a short distance of the top of the incline of 1 in 75, without any special apparent cause for its doing so, the steam pressure which had been 130 lbs. at starting, being still according to the driver's statement 125 lbs. when his engine stopped, a statement more or less corroborated by Mr. Elliott and fireman Parkinson. The stoppage took place at 10.33 a.m. by Mr. Elliott's watch, 18 minutes having been occupied in running the $3\frac{1}{4}$ miles, giving an average speed of about 11 miles an hour.

It being impossible to start the train upon this incline (even allowing the engine time to recover the slight amount of steam which it was said to have lost) after it had once stopped, Mr. Elliott, after consultation with driver McGrath, determined to divide it, send on as much of it to Hamilton's Bawn (the next station, about a mile and a half distant) as the siding there would probably hold, and then come back for the remainder.

Mr. Elliott then went along the train to the rear van, and told guard Henry to put his brake on tight, Henry in reply stating that it was on. Mr. Elliott then asked him if he had any sprags, and he said he had not. He then directed Henry to put stones behind the wheels, and he saw him leave his van on the left side for the purpose, he assumed, of doing so. Mr. Elliott then returned towards the front of the train, called guard Moorhead, and learning from him that there might be room for five vehicles at Hamilton's Bawn, he decided to divide the train between the fifth and sixth vehicles from the engine. Hereupon Moorhead went between the fifth and sixth vehicles, first uncoupled the vacuum brake pipes, and put each end on its stop (doing this of course released all the brake blocks, but gave the driver power over those on the first five vehicles, the rear 10 vehicles being left dependent upon the hand brake in the rear brake carriage); he next unhooked the side chains; he states that he then put a stone behind the front wheel of the sixth vehicle to prevent the rear carriages running back when he unscrewed the screw coupling; he then unscrewed this coupling,



and as the stone kept the sixth vehicle in its place, he was able to take the coupling off the hook without much difficulty. The train having been now divided into two portions, and both portions being, according to the evidence, at perfect rest, Mr. Elliott directed Moorhead to tell the driver to go ahead gently to Hamilton's Bawn. Moorhead having done so, jumped into his van, took off his brake, and felt the van move back 12 or 18 inches, caused, he thinks, by the driver setting back in order to get a start. This backward movement must, he supposes, have set the rear portion of the train in motion, as it had been perfectly stationary up to this time. On seeing the rear of the train in backward motion, Moorhead called to driver McGrath, who was just moving ahead, to set back gently so that he might couple the train together again. McGrath did so, but Moorhead, after jumping down and commencing to run towards Armagh, unfortunately tumbled down twice, and never succeeded in reaching the runaway portion of the train, the speed of which was momentarily increasing. Moorhead then tried to jump on to the front portion as it passed him, in pursuit of the rear portion; but failing to do so he followed it down till he passed it near the scene of the collision, which had of course occurred some minutes before he reached the spot.

Mr. Elliott's evidence as to what took place after Moorhead had uncoupled the train is to the following effect:—After the severance had been accomplished without driver McGrath having to set back, Moorhead having been able to take off the screw coupling by unwinding the screw to its full extent (which Mr. Elliott had directed him to do), he observed that both portions of the train remained at perfect rest; he then directed Moorhead to tell McGrath to go straight away, and on no account to come back against the carriages; Moorhead accordingly went forward, while he himself went along the left side of the train, towards the rear van, intending to go back towards Armagh with fog signals to protect the rear portion; he had got nearly as far as the rear brake carriage, when he saw the buffers being closed up, heard the carriages grinding over the stones which had been placed behind them, and saw also the brake carriage begin to move back when the pressure from the vehicles in front of it came against it. He at first tried to stop the backward motion by putting down more stones behind the wheels, and got down three and four; but finding these were of no use, as they were at once crushed, he jumped on to the step of the rear vehicle, the wheels of which he noticed were revolving and not skidding at all, shouting to guard Henry to put the brake on tighter. Henry said he could make nothing more of it, and Mr. Elliott saw him and another man working at the brake handle; he then jumped off the van step (the speed of the runaway carriages having by this time reached about 20 miles an hour) to make his way towards the engine (which was following the runaway portion), and fell down in doing so; as the engine passed him he jumped up on it and asked the driver why he had come back against the carriages, and he said he could not get started, and had set back the slightest thing. They then continued to follow the runaway vehicles down the incline, but soon lost sight of them.

Mr. Elliott's idea seems to have been that he would save time by dividing his train rather than wait to be assisted by the regular train; he was under the full impression that the van brake would hold the rear portion of the train, or he would not have divided it, and he thinks that the brake must have been out of order. He saw two or three men putting stones under the wheels when the train began to move back; there were no pieces of wood lying about which could be used as sprags, and it did not occur to him to make use of some old iron rails which were lying near the spot.

Driver McGrath states that on being told by Moorhead to go forward to Hamilton's Bawn, he set back very slightly in order to get a start, not so much as was done in the experiment which he had witnessed with a similar train, and he cannot account for the inability of his engine to reach the top of the bank with the excursion train on the 12th, except that it might have not been steaming so well as when running with the experimental train. He saw Moorhead fall down when attempting to overtake the runaway vehicles for the purpose of hooking them on to the front portion; he followed down as closely as he could for some distance, Mr. Elliott being on the step of one of the front carriages. McGrath was stopped at a level crossing a short distance from where the collision occurred, having, he says, whistled most of the way down, and having kept in view the rear portion, of which he does not think the speed exceeded 30 miles an hour till near the last.

Fireman Parkinson's evidence differs in no material respect from that of his driver. He was not on the foot-plate, but away on the framing, when the separation of the train took place, and on returning to it McGrath told him that the rear portion was running away.

Guard Henry's evidence (taken in hospital), as to what took place after the train stopped near the top of the incline, is to the following effect:—He states that on the train stopping he put on his hand brake, and did not notice that the vacuum brake had been applied; that in about three minutes Mr. Elliott came to the van and told him to apply his brake (which he stated he had already done), and to scotch the wheels with stones: that he accordingly got out and put one stone under each of the six van wheels, and also under the three right-hand wheels of the vehicle next the van; that as he was putting down the last he felt the carriages coming back, upon which he at once got into the van, and tried, with the assistance of two passengers, to get an extra turn at the brake handle: and was still doing this when Mr. Elliott jumped up on the left step and told him to do the best he could with the brake without breaking the handle, Henry replying that he could do no more. Henry states that Mr. Elliott then said, "Oh, my God! we'll all be killed," and jumped off; that the speed gradually increased till it became so fast that the hedges could not be seen as they were passed; that he was still in the van when the crash took place, and knew nothing more till he came to his senses in the infirmary; that it had been his intention to go back and protect the train with fog signals, &c. after he had done scotching the wheels.

The evidence of Murphy and Herd, the driver and fireman of the 10.35 a.m. regular passenger train from Armagh to Newry, as to what occurred just before and after the collision, is to the following effect: They were running at a speed of between 20 and 30 miles an hour, when, near the 19th* mile post, Herd, who was on the right side of the engine, caught sight of something coming back in the cutting a short distance ahead, the line being on a slight curve to the right; he called out "hold," upon which Murphy opened the whistle, shut off steam, crossed the foot-plate to see what was coming, and on realising that they were runaway vehicles, applied the vacuum brake with full force, Herd at the same time reversing and putting on steam the reverse way; the speed had thus been reduced to three or five miles an hour, when the runaway vehicles came crashing into the engine. Herd had jumped off just before this to the right, rolled down the slope of the bank, and escaped without serious injury. Murphy remained on the foot-plate, having turned round and grasped the tender coal plate. He says, that on the carriages colliding with the engine it stopped dead, quivered, separated from the tender, and turned completely over on its right side, remaining on the top of the slope of the bank with its left wheels uppermost; the tender gave a great lurch on the engine breaking away from it, but (curiously enough) kept the rails and ran back with the horse-box still attached to it, the remainder of the train having broken away from the horse-box. Murphy went back with the tender, standing on the foot-plate, and the tender hand brake not having been injured by the collision, he was able to stop the tender and horse-box after they had run back about a quarter of a mile, and 30 or 40 yards before they had overtaken the rest of his train.

Graham, the guard of the 10.35 a.m. train, riding in the rear brake carriage, hearing his driver whistle near the 19 $\frac{3}{4}$ mile post, the speed being about 20 miles an hour, at once applied his hand brake, though he thinks the vacuum break was on before he did so; having done this, he looked out on the left side, saw the vehicles running back, and immediately after this came the crash, which knocked him senseless for a few seconds; on recovering himself, he found that the brake carriage and the four vehicles in front of it were running back towards Armagh at a speed of about five miles an hour; he at once again applied the van brake (taken off probably by the collision) and was able to stop the vehicles near the over bridge, after they had run back about a quarter of a mile.

The prompt action of driver Murphy and guard Graham thus averted what might have been further serious collisions between the two portions of their train, or between the rear portion and the buffer stops at Armagh station.

Having recited the leading particulars, so far as I have been able to ascertain them, connected with this disastrous occurrence, I will now proceed to state the causes which led to it. The immediate cause was the want of the application of sufficient brake power to hold the rear portion of the excursion train, when this portion, consisting of nine vehicles and a brake carriage, which had been separated from the front of the train by direction of Mr. Elliott, was slightly bumped by the front portion of the train when the driver had to set back previously to starting for Hamilton's Bawn. When the separation first took place, I have no doubt that both portions of the train remained stationary, the front

* They must have meant the 19 $\frac{1}{2}$ mile post, as the collision occurred close to the 19 $\frac{1}{4}$ mile post.

portion attached to the engine having the couplings stretched, and having, therefore, no tendency to move back, and the rear portion being held in position by the stone which guard Moorhead had placed behind the left front wheel of the sixth vehicle before uncoupling; there being also stones (probably 9 or 10) behind the wheels of the rear brake carriage and some of the other rear vehicles, and it being also supposed by Mr. Elliott, and affirmed by guard Henry, that the hand brake in the rear brake carriage was fully applied. The bump received by the rear portion of the train when the driver set back slightly, in order to start the front portion, was sufficient to overcome the resistance of the stone behind the front wheel of the sixth vehicle, and when this resistance to motion was gone, the nine vehicles all ran back upon the brake carriage, the stones behind the wheels in front of the brake carriage being crushed, and the brake carriage itself, notwithstanding the stones which had been placed behind its six wheels, and notwithstanding that the hand brake applying blocks to the four wheels is said to have been hard on, began to move backwards, Mr. Elliott declaring that he saw its wheels revolving as if the hand brake were not properly applied. At this moment guard Henry was out of the brake carriage putting down stones behind the wheels, and if, as he states, he had left the hand brake tight on when he got out of the brake carriage a minute or two previously, one of two things must have happened, either the brake handle must have been meddled with by some of the passengers in the brake compartment, it having been perhaps turned "off," or in the wrong direction, with the intention of turning it "on" more securely, or the brake may have been out of order. I cannot, of course, speak positively as to the brake handle having been meddled with; but as to the condition of the brake, it is stated by two witnesses, carriage examiners McShane and Pearson, to have been working properly the same morning, the former at Dundalk and the latter at Armagh having seen it used in shunting the train, when it is said by each man to have effectually skidded the wheels. It was also stated at the last day of the magisterial enquiry that the brake apparatus had been found among the wreckage, and appeared to have been in good working order. It may therefore, I think, be assumed that the brake *was* in good working order, but had either not been properly applied by guard Henry before he left the brake compartment to place stones behind the wheels, or had been meddled with by some passenger after Henry had left the brake compartment.

The result of an experiment which I tried on the spot with a train as similar as possible to the excursion train, the 12 front vehicles of both trains being the same, the rear three vehicles of the experimental train being selected for their similarity to the rear three vehicles of the excursion train which were destroyed, showed that there was quite sufficient brake-power in the rear brake carriage to hold the rear 10 vehicles, they showing no inclination to move when bumped by the setting back of the engine and the front five vehicles as the driver was endeavouring to start the latter, no stones being placed behind the rear wheels in this experiment, but one stone having been placed behind the front wheel of the 6th vehicle (as guard Moorhead stated he had done) to hold it while the uncoupling was being effected; this stone having prevented any motion until the front portion of the train was set back on the rear portion.

It would then appear that the immediate cause of the collision must be attributed to the brake-power of the rear brake carriage not having been fully brought into use—or, if brought into use, kept in use—when the uncoupling of the train took place. As the safety of the rear portion of the train depended mainly upon the holding power of this brake carriage, the stones behind the wheels being of very little use when the vehicles were once set in motion, it was Mr. Elliott's bounden duty to have seen for himself that the brake of this rear vehicle was in good working order (as he might easily have done by causing the engine to let the train drop back on it after its brake had been applied, and before the uncoupling took place); and then, having satisfied himself upon this point, to have left guard Henry in charge of the brake handle, and not to have called him on to the ground, thereby rendering it possible for the brake handle to be meddled with by any of the passengers in the brake carriage. Mr. Elliott must, therefore, in my opinion, be held most responsible for the immediate cause of this deplorable collision. His motive in thus having the train uncoupled was, he informed me, to save time; and here, in my opinion, he erred in judgment, for as Hamilton's Bawn was about $1\frac{1}{2}$ miles distant from the top of the incline, it would have taken at least 10 minutes for the engine to go there with the front five vehicles, place them in the siding and return, and at least another 10 minutes would be consumed in taking the rear 10 vehicles to Hamilton's Bawn and there re-connecting the train; thus it would have been at least 10.55 a.m. before the train could have started from Hamilton's Bawn, where the ordinary train was due at 10.50 a.m., and where, being three minutes late in starting, it would have arrived at about 10.55 a.m., or soon after, allowing for

the delay which would have been caused by the pushing of the excursion train. If Mr. Elliott had therefore only had the prudence to wait where the excursion train stopped near the top of the bank, and to send back one of the guards to protect his train, with instructions to ask the driver of the ordinary train to help the excursion train up the short remaining distance, he would hardly have lost time, and would besides have avoided the risk inseparable from the delicate operation he unwisely determined to carry out, and which should have been resorted to under only most exceptional circumstances, and not, as in the present case, where there was so easy a solution of the difficulty.

Rules No. 223 and No. 226 (c) of the Company's rule book, issued in 1880, are as follows:—

Rule 223.—When a train is stopped from any cause (except where it is efficiently protected by fixed signals) the guard, if there be only one, or the under-guard if there be more than one, must immediately go back 120 yards to stop any following train The guard must not return until recalled by the engine-driver sounding the whistle

Rule 226 (c).—Should a train come to a stand travelling up an incline the driver must send his fireman to the guard to acquaint him with the cause of the stoppage, and the train must remain standing and be secured in its position until a distinct understanding has been come to between the driver and guard as to their further proceedings. With a heavy train the guard must not leave his van until perfectly satisfied that his brake will hold the train securely. The train must not be moved again in either direction until the guard has resumed his van.

Mr. Elliott, being in charge of the train, should have seen that these rules were carried out to their fullest possible extent; whereas there was no intention of taking any means to protect the rear of the train until after the front portion had been despatched, and there was a complete ignoring of the precautions enjoined in the last two paragraphs of Rule 226 (c).

Mr. Elliott displayed a further error of judgment in not insisting, before the excursion train started, upon its being helped up the bank by the engine of the ordinary train. On at first noticing the size and weight of the excursion train, he had given orders to this effect, but countermanded them after consultation with driver McGrath, who having in the first instance declined to take so heavy a train up the bank, afterwards stated that he thought he could manage it.

I am sorry to have to bring these grave charges against Mr. Elliott, who appears to have been a man of excellent character, of long experience in the conduct of excursion trains, and to have raised himself by his own efforts from the position of office boy to that of chief clerk to the traffic manager at Dundalk.

I now come to consider the less immediate causes of the collision, and first among these was the despatch of an engine (No. 86) with less haulage power than was judicious, and in charge of a driver (McGrath) who was not an experienced driver (having been only two years in that capacity, and acting only as a spare driver), who was not in the regular habit of driving No. 86 Engine, and who had never—as driver—worked on the line between Armagh and Goragh Wood. McGrath had last worked on the line as fireman with an excursion train in 1886; he had been similarly engaged in 1884 and 1885, and in 1884 had been fireman of a ballast train for six months.

The haulage power of engine No. 86, a six-wheeled engine with the driving and trailing wheels 6 feet 0½ inches diameter coupled, with inside cylinders 16 inches diameter and 22 inches stroke, weighing when in working order 33·50 tons, and the tender 22 tons, with a boiler steam pressure of 130 lbs. per square inch, would be according to the usual formula—with a dry rail and a speed of 15 miles an hour on a gradient of 1 in 75 and a curve of one mile radius—about 186 tons; on a gradient of 1 in 70, and a curve of 33 chains radius about 168 tons; these numbers becoming 193 tons and 174 tons if the speed is supposed to be only 10 instead of 15 miles an hour, and these numbers being exclusive of the weight of the engine and tender, 55·5 tons.

The locomotive department at Dundalk had been asked to provide accommodation for a party of 800 excursionists, principally children, and, as it was originally intended that the train should consist of 13 vehicles, its weight, exclusive of the engine and tender, would have amounted to about 126 tons empty, or to about 157 tons loaded, allowing 31 tons to represent the weight of the excursionists, of whom the bulk would be children.

As the train, both on its outward and return journeys, would encounter ascending gradients of 1 in 70·2, with curves of 33 and 30 chains radius occurring on these

gradients, the theoretical haulage power of the engine on these gradients and curves, even at a speed of 10 miles an hour, would be only 174 tons with a dry rail, and it was therefore decided want of judgment on the part of the running shed foreman, Mr. William Fenton, acting for Mr. Park, the locomotive superintendent, and his assistant—who were absent from Dundalk when the arrangements for the excursion train were made—to send an engine with so slight an excess of haulage power over and above what would be required, supposing the rails to be in a good condition for running and no increase to the number of vehicles or of excursionists to be made; and it was a further error of judgment to send in charge of the engine, on such responsible duty, a man of so comparatively little recent experience on the line, as driver McGrath, who had never acted as a driver on the greater part of the line, and had not been on it as fireman since the summer of 1886.

The over-confidence of driver McGrath as to his being able, with the engine power at his command, to draw the train up the steep gradients between Armagh and the summit of the line, was the next less immediate cause of the disaster. It is greatly to be regretted that he did not adhere to his first refusal to attempt unassisted the haulage of a heavier train than he had expected to have to deal with when he left Dundalk, and I presume his better judgment must have been overcome by the remark which he said was made to him by the Armagh station-master, viz., that “any driver that comes here does not grumble about taking an excursion with him.” Up to the last moment before starting, McGrath could have had the assistance of the engine of the ordinary train, had he not decided to dispense with it. Why he was unable quite to succeed in reaching the top of the incline of 1 in 75, starting, as he says he did, with a steam pressure of 130 lbs. and stopping with one of 125 lbs., can only have been due to some want of proper management of the engine, for in the experiment before alluded to with the same engine No. 86, and with a train composed of the front 12 vehicles of the excursion train and three others, to represent as nearly as possible those destroyed, a weight of 39½ tons being distributed over the vehicles to represent the probable weight of the passengers, there was not the least difficulty in reaching the top of the gradient, the speed all the way up being uniformly as nearly as possible 15 miles an hour, and the steam pressure on reaching the summit about 125 lbs. The weather was much the same as on the 12th June, but the driver was an experienced man. The theoretical haulage power of the engine on this gradient of 1 in 75 and round the curve of a mile radius is, as stated above, about 186 tons, at a speed of 15 miles an hour, and it is singular how closely this approximates to the actual weight of the experimental train, which was about 185½ tons, exclusive of engine and tender.

No blame attaches to the fireman of the excursion train.

As there is no evidence to show that acting guard Henry did not put on his brake before leaving the brake carriage, as he says he did apply it to the best of his power, and as it is hardly credible that he should not have done so, he may, I think, have the benefit of the doubt.

Acting guard Moorhead appears to have acted to the best of his ability in carrying out Mr. Elliott's orders, and is in no way to be blamed.

Both Henry and Moorhead, although not regular guards, are experienced men, and have frequently acted as guards, both with excursion and other trains.

Driver Murphy, fireman Herd, and guard Graham of the ordinary train appear to have done their duty prior to the collision; Murphy and Graham are deserving of commendation inasmuch as, though both knocked about and shaken by the collision, they each succeeded in promptly stopping the runaway portions into which their train was divided, without any further mishap occurring.

It was a grave error to allow passengers to travel in the brake-van and brake-compartment of the brake-carriage of the excursion train; it is, no doubt, a difficult thing to prevent in a train of which, as in the present case, the carriages are full, but it is a practice that should be sternly prohibited.

It was also a wrong thing to permit the excursion train to start with many, if not all, of the doors locked on both sides. This is said to be a common practice with excursion trains for children, to prevent their improperly opening the doors when the train is in motion; it is, however, a practice which has, before this, led to serious consequences, and very probably, on the present occasion, prevented the escape of some of the passengers before the runaway vehicles had attained a high velocity.

Considering the weight of the excursion train, and the steep gradients it had to surmount, both brake van and brake carriage should have been placed at the rear of the train instead of the one in front and the other in rear.

Mr. Elliott appears to me to be responsible for passengers having been allowed to travel in the front brake van and rear brake compartment, and for not having both brake vehicles placed at the rear of the train, and Mr. Foster, the station master at Armagh, for allowing the doors of the carriages to be locked on both sides.

Having thus indicated, to the best of my judgment, the degree of culpability attaching to those involved in this most lamentable disaster, I will proceed to consider what means can be adopted to guard against the recurrence of any similar calamity.

This terrible collision would in all human probability have been prevented had the excursion train been fitted with an automatic continuous brake instead of (as it was) with only a non-automatic continuous brake. In the former case, on the dividing of the train taking place, the brake would have remained on, or (had it been previously taken off) would have been at once applied to, the rear vehicles, and these would have remained immovable, notwithstanding any possible bump they might have received from the front of the train, when the driver was setting back in order to make a start.

It may also be remarked that the ordinary train had a narrow escape from serious collision between the portions into which it was divided, or with buffer stops, whereas had it been supplied with an automatic brake, there would have been no risk of such collisions.

As the President of the Board of Trade has stated in Parliament his intention to introduce a Bill to make compulsory the adoption of automatic continuous brakes, should the report on this collision point out that it would have been avoided had the excursion train been fitted with them, it is unnecessary for me to say more upon the subject.

With regard to the block telegraph system, had it been in operation on the line between Armagh and Hamilton's Bawn, it would, no doubt, have considerably mitigated the fatality attending this collision, and this for the following reasons: When the collision took place about $1\frac{1}{2}$ miles from the top of the gradient of 1 in 75, the train had, taking into account the resistance offered by the application of the brake on the rear brake carriage, probably attained its maximum velocity of (say) about 40 miles an hour, on meeting the engine of the ascending train, running at a velocity of (say) 5 miles an hour, and the collision was consequently intensified in its violence by the fact of both trains being in motion in contrary directions. Had the block system been in operation the ordinary train would have been standing at Armagh platform, and supposing the signalman had, through want of judgment, left the facing points leading to the goods yard (which points are situated about 350 yards from the Newry end of the Armagh platform) right for the passenger line, the runaway vehicles—which would have lost a slight portion of their speed in descending the less steep gradient of 1 in 82 two-thirds of a mile in length, succeeding that of 1 in 75, and which would have lost still more speed on the 400 yards of level which intervenes between the foot of the gradient of 1 in 82 and the Newry end of the platform, where the engine of the ordinary train would have been standing—would have come into collision with that engine at a state of rest instead of in motion towards them, and the results of the collision would have undoubtedly been much less serious.

Supposing the signalman to have acted with judgment, and to have left the facing points in their normal position so that the runaway vehicles would have been turned into the goods yard they would have had an additional 165 yards of level to run before reaching the buffer stops at the end of the sidings, have thus had their speed still further diminished, and have then come into collision with a much less formidable obstacle than an engine, the results of the collision being still further mitigated. Had there been waggons standing in the sidings the advantage gained would have still been considerable.

Under whatever aspect, therefore, the circumstances are viewed, it seems manifest that if the block telegraph system had been in force between Newry and Hamilton's Bawn the results of this collision would have been considerably mitigated, and it becomes consequently a grave question whether legislative power should not be sought to make the block system compulsory on old lines, as it has been for many years past on new lines.

The running of such heavily-laden excursion trains as the present on lines with bad gradients, is a practice much to be deprecated; it would be far better to limit them to

about 10 vehicles. This remark more especially applies when the station from which the train starts is like that of the Newry and Armagh Line at Armagh, which, as at present arranged, is perfectly unsuited for dealing with long passenger trains. In the present instance, the train, owing to its length, had to be loaded on the main line, partly at the up platform and partly at the down platform, and afterwards by a series of shunts to be moved on to the Newry and Armagh Line.

It would seem desirable that wooden sprags should form part of the equipment of the vans of all passenger trains in the same way as they now do of the vans of goods and mineral trains. Had sprags been available in the present case, and been put between the spokes of the wheels of the rear brake carriage (the only open wheels except those of the front van), they would, in all probability, have prevented the brake carriage moving backward when the weight of the rear vehicles came against it.

The Assistant Secretary,
Railway Department, Board of Trade.

I have, &c.,
C. S. HUTCHINSON,
Major-General, R.E.

APPENDIX.

LIST OF THOSE KILLED IN ACCIDENT OR DIED SINCE.

Name.	Age.	Address.	Occupation.
Samuel M. Steele	40	Abbey Street	Clerk of Petty Sessions.
Sarah Eliza Steele	9	Do.	Children of do.
Ethel Steele	7	Do.	Do.
Mina Reilly	16	Do.	
Maria Boyd	17	Barrack Hill.	
Joseph Johnston	45	Lower English Street	Labourer.
Agnes Hull	12	Jenney's Row.	
Betsy Devlin	20		Servant.
Catherine Murry	28	Lower English Street.	
Eliza Johnston	40	Banbrook Hill	Wife of Joseph Johnston, labourer.
Margaret McClure	37	Jenney's Row.	
Jane Thompson	40	English Street	Servant.
William R. W. Mullan	18	Abbey Street	Son of Reverend W. Mullan.
William Crozier	25	Market Street	Assistant in hardware shop.
Thomas Henderson	60	Barrack Street	Plumber.
Charles Neale	45	Lunatic Asylum	Gatekeeper.
Mary J. Neale	40	Do.	Wife of Charles Neale.
Eliza Neale	—	Do.	Daughter do.
William Walker	13	Barrack Street.	
Minnie Edwards	7	Railway Street	Child of G. A. Edwards, Esq., J.P.
David Edwards	8	Do.	Do.
James Cleeland	58	Do.	Grocer.
Margaret Cleeland	45	Do.	Wife of James Cleeland.
Robert Cleeland	7	Do.	Son of James and Margaret Cleeland.
Samuel Cleeland	10	Do.	Do.
Charles Cleeland	14	Do.	Do.
Margaret Patterson	17	Drummond.	
Margaret Steenson	11	Lineuhall Street.	
Margaret Connolly	45	Manchester.	
Joseph McCann	50	Poor School Lane	Labourer.
Catherine McCann	40	Do.	Wife of Joseph McCann.
Robert Mitchell	40	Scotch Street	Hairdresser.
Mary Mitchell	35	Do.	Wife of Robert Mitchell.
William R. Mitchell	2	Do.	Son of Robert and Mary Mitchell.
William W. Holland	17½	Dobbin Street	Assistant teacher in National School.
Margaret Gibson	18	Irish Street	Milliner.
Mary Orr	15	Ballynich	Farmer's daughter.
Jane Orr	18	Do.	Do.
Minnie Murdock	16	English Street	Milliner.
Henry Jenkinson	72	Dobbin Street	Ex-warder retired on pension
Mary Jenkinson	36	Do.	Wife of Henry Jenkinson.
Mary Anderson	19	Tullyarn	Farmer's daughter.
Sarah Connoll	24	Mullyloughran.	
Annie Eager	19	Ballynich	Farmer's daughter.
Margaret M'Vey	9	Edward Street.	
Ellen Watt	20	Middleton, Tullyelene.	
Mary Johnston	—	Market Street.	
Isabella M'Farland	22	Barrack Hill	Dressmaker.
Bethia M'Farland	20	Do.	Do.
John Mullaghan	50	Charter School Lane	Labourer.
Anne Bell	27	Lower English Street	Servant.
Robert John Irwin	23	Lunatic Asylum	Keeper in Lunatic Asylum.
Charles Robinson	18	Market Street.	
Bertie Robinson	14	Do.	
William Bourke	18	English Street	Grocer's apprentice.
Eugenia Simpson	15	Scotch Street.	
Ernest Logue	10	Palace Row.	
Lizzie Sloan	14	Barrack Hill.	
Sarah Scott	41	Drummond	Farmer's wife.
William Parks	—	Newry Road.	
Agnes Parks	18	Mullinure	Farmer's daughter.
Robert Warnock	—	Newry Road.	

LIST OF THOSE KILLED IN ACCIDENT OR DIED SINCE—*continued.*

Name.	Age.	Address.	Occupation.
Francis Latimer	45	Lunatic Asylum	Gardener.
Mary Rountree	16	Slater's Grange	Dressmaker's apprentice.
Lizzie Rountree	18	Do.	Do.
Hettie Wolff	10	Abbey Street.	
James Orr.			
Mary Jane Mason	12	Scotch Street	Daughter of James Mason, grocer.
F. W. Moore	12	Lisadian.	
Minnie Jane Quinn	13	Barrack Street	Dressmaker.
Henry Hillock	14	Palace Row.	
Maggie Mills	22	Lisadian	Farmer's daughter.
Margaret Mason	18	Scotch Street	Daughter of James Mason, grocer.
Edith C. Irwin	10½	Do.	Daughter of James Irwin, grocer.
Matilda Robinson	50	Drumadd.	
Thomas Hill	16	Lower English Street	Clerk.
Morgh Huston	17	Ballycrummy.	
Mary Hamill	21	Lunatic Asylum	Nurse.

Great Northern Railway Co. (Ireland),
Locomotive Engineer's Office, Dundalk,
25th June 1889.

Particulars of Engine, Tender, and Vehicles composing the Excursion Train in Collision near Armagh on the 12th June 1889.

Vehicles.		Weight of Vehicles Empty.	Probable Load.	Total Weight.	No. of Wheels.	Class of Wheels.	Length over Buffers.	Date of Construction.	Date when last in Works for Repairs.
No.	Class.								
86	Engine	tons cwt.	tons cwt. qrs.	tons cwt. qrs.	6	—	ft. ins.	1880	
86	Tender	22 0	—	22 0 0	6	—	20 6	1883	
275	Van	9 10	0 11 2	10 1 2	6	Iron	32 0	1879	
35	First	10 7	2 1 0	12 8 0	6	Wood	28 5	1865	
218	Third	10 15	3 3 0	13 18 0	6	"	34 0	1884	
336	"	9 10	3 3 1	12 13 1	6	"	31 9	1876	
156	"	10 5	3 3 0	13 8 0	6	"	32 2	1879	
140	"	9 10	3 3 0	12 13 0	6	"	31 9	1880	
333	"	9 18	3 3 0	13 1 0	6	"	32 0	1872	
161	"	9 5	3 3 0	12 8 0	6	"	31 9	1880	
332	"	9 10	3 3 0	12 13 0	6	"	32 0	1872	
24	First	9 10	2 1 0	11 11 0	6	"	27 4	1859	
213	Third	9 13	2 13 0	12 6 0	6	"	28 0	1880	
194	"	8 17	3 3 0	12 0 0	6	"	31 10	1878	
152	* "	9 10	3 3 2	12 13 2	6	"	30 9	1878	January 1888.
323	* "	9 14	3 3 0	12 17 0	6	"	32 0	1876	June 1888.
250	* Van	10 0	0 18 2	10 18 2	6	Iron	31 3	1870	December 1888.
		201 4	39 15 3	240 19 3			512 9		

* These three vehicles were destroyed in the accident.

JAS. C. PARK.

Damage done to rear portion of Excursion Train ex Armagh, 12th June 1889.

1st rear vehicle, No. 250.—Brake van and third class, viz., guard compartment, luggage, and one third. Six wheels, 31' 3" over buffers. Completely destroyed and wheels shot down the bank.

2nd rear vehicle, No. 323.—Third class. Six compartments. Six wheels, 32' 0" over buffers. Completely destroyed and wheels shot down the bank.

3rd rear vehicle, No. 152.—Third class. Six compartments. Six wheels, 30' 9" over buffers. Body completely destroyed. Roof and one end left in position. Two pairs wheels knocked from under. Under frame crushed slightly and lying exactly opposite to the engine, a little on the opposite side of the line from where the engine is now lying.

4th rear vehicle, No. 194.—Third class. Six compartments. Six wheels, 31' 10" over buffers. This vehicle was off the road all wheels on north side of line, and one pair of wheels from under another carriage locked under the hind end. Two end panels broken, but no other damage done.

5th rear vehicle, No. 213.—Third class. Five compartments. Six wheels, 28' 0" over buffers. All wheels off the road and inside the rails, which were spread. One window broken, but no other damage done.

6th rear vehicle, No. 24.—First class. Four compartments. Six wheels, 27' 4" over buffers. All wheels under but off the road between the rails, which were also spread at this point. No injury to the carriage.

7th rear vehicle, No. 332.—Third class. Six compartments. Six wheels, 32' 0" over buffers. One wheel of hind pair off the road. One window broken. One seat broken. No other damage.

All the other vehicles remained on the road.

All couplings remained coupled and tight and none broken, except where vehicles were destroyed.

Damage to 10.35 a.m. regular Train at Armagh, 12th June 1889.

Engine.—Right hand boiler clack box broken off. Side of cab crushed in. Coupling between engine and tender broken. Brake gearing damaged.

Tender.—Slightly damaged.

Vehicles.—No damage of importance.

Printed copies of the above report were sent to the Company on the 7th November.

GREAT NORTH OF SCOTLAND RAILWAY.

Board of Trade, (Railway Department,)
14th August 1889.

SIR,

IN compliance with the instructions contained in the Order of the 29th ultimo, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances which attended the collision, that occurred on the 25th ultimo, at Brucklay station of the Great North of Scotland Railway.

The mixed train, which is due to leave Fraserburgh at 2.40 p.m. for Aberdeen, ran into the middle siding of three which are joined to the passenger line by a set of facing-points at the north end of the station, and the train was not stopped before the engine struck six waggons that were standing in the siding and drove several of them over the mound at the end of the siding.

The engine came to a stand near the mound, amongst the waggons that it had struck.

The train consisted of an engine and tender, three open box waggons, two covered waggons, two open box waggons, a composite carriage, two third-class carriages with brake compartments, a first, a third-class carriage, and a luggage brake-van, in which the guard in charge was travelling. The vehicles were coupled together in the order in which they are given. All the vehicles left the rails. The five passenger coaches came to rest crosswise between the siding next to the passenger line and the centre siding. One carriage had all the wheels pulled off, and two were on their sides. One waggon was on its side and another was turned bottom upwards. Several couplings between the vehicles gave way.

One man who had been attending to his cart in the station yard was found dead under the composite carriage, and seven passengers besides the guard of the train complained of being hurt, but their injuries are believed to be slight.

A list of the damages to the rolling stock is given in the Appendix.

Sixteen rails of the sidings were broken or twisted, 199 chairs and 40 sleepers were broken, and one set of points was damaged.

Description.

The railway is a single line. There are fixed places for up and down trains to pass each other. When necessary, and trains are out of time, these passing places are altered by telegraph from head-quarters. Tyer's block instruments are used by the Company. Brucklay station is approached from the north on a falling gradient of 1 in 75, which is about a mile and a quarter long; the line is then level for about 35 chains, and then it falls again on a gradient of 1 in 100 for about 12 chains to the station platform, which is placed on five chains of level line. The facing-points which lead to the sidings are about two-thirds of the way up the incline of 1 in 100, and on a curve to the south of three-quarters of a mile radius.

The up distant-signal is 293 yards north of the facing-points. There is an indicator semaphore-signal about 12 feet high at the facing-points. This signal is worked by the same lever as the facing-points which are 176 yards from the north end of the station platform.

The three sidings in the station-yard lead into one, about 66 yards south of the facing-points on the main line. The indicator-signal can be seen by the driver of an up train immediately after he passes the up distant-signal.

The signals and points are not interlocked, and the facing-points and indicator are worked by a ground lever close to the points which is weighted for the points to lie in the right position for trains running on the main line. This point lever can be fixed for the main line or for the sidings by an iron plate. The plate can be thrown back or can be fixed with an iron pin and padlocked when necessary. On the day in question the train was running at a speed of about 25 miles an hour when it reached the facing-points and ran into the sidings.

The up distant-signal was at all right. The indicator-signal was at danger, but the driver did not notice it, as the man at the points was signalling the train on by waving a white flag. The engine-driver did not become aware that the points were set wrong until his engine swerved on running through the points. He then applied the Westinghouse brake which was fitted to the engine and tender, but this brake was not fitted to the train. The guard had applied the screw-brake in his van when the train commenced to descend the incline.

Evidence.

George Barron, guard of the 2.40 p.m. train from Fraserburgh on the 25th July, stated: My train consisted of an engine and tender, three open box waggons, two covered waggons, two open-box waggons, a composite carriage, two third-class brakes, a first-class, a third-class, and a passenger luggage van in which I rode. The train started seven minutes late owing to the late arrival of the previous down train. It was seven minutes late on leaving Strichen. We approached Brucklay station at a speed of about 25 to 30 miles an hour. The distant-signal was at all right. I did not see the indicator-signal at the facing-points, but I saw the pointsman holding out a white flag. I did not know there was anything wrong until I felt the collision. I think my brake-van was at the points at the time. My brake was on. I had put it on when running down the bank at the north side of the station. I was knocked against the brake handle. I was hurt a little below the stomach. I have not been off duty, and do not feel anything wrong now. I have been 15 years in the Company's service, and nine years a guard. There were about 20 passengers in the train.

James Cooper, station agent at Brucklay station, stated: I have been about 16 years in the Company's service and about four years in charge of the station. At 3.8 p.m. on the 25th July I received notice from Strichen on the telegraph instrument that the 2.40 p.m. train from Fraserburgh had left, and I went into the station yard, where pointsman Tocher was assisting to load a waggon, and told him that the passenger train was signalled, and that he was to go to the facing-points at the north end of the yard. I assisted to put the rest of the load into the waggon, and then the pointsman went to the points and I returned to the office, and at 3.14 p.m. I telegraphed the passenger train on to Maud. I then returned to the platform. I saw the pointsman at the points and gave him a signal with a white flag, which he acknowledged. It was to notify to him that I had telegraphed the train forward, and that all was right. The train arrived at 3.19 p.m., and ran into the siding instead of running along the main line. It had taken about the usual time to run from Strichen. It was about seven or eight minutes late. The passenger train struck six waggons that were on the loop line, which is the middle siding. There are three sidings at the down side of the passenger line. Some of the waggons were knocked over the mound at the end of the siding, and the engine came to a stand against these waggons. The engine and tender had all their wheels off except the middle and two rear wheels of the tender; the next, a goods waggon, was coupled to the tender, and had the trailing-wheels off at the right side. It was standing upright. The next, a goods waggon, was also coupled, and had all except the right-hand leading-wheel off the rails; the third waggon was coupled, and had all the wheels off except the hind wheels at the right side; the next, the fourth waggon, was uncoupled except the side chains, and had all its wheels off except the right side leading-wheel; the next, the fifth, a covered waggon, was uncoupled and lying on its right side; the next, the sixth, an open goods waggon, was lying bottom upwards; the next, the seventh, an open goods waggon, was on its wheels, but off the rails, it was coupled by one side chain to the composite carriage which came next to it, and which was standing crosswise between the first and centre siding. The third-class brake-carriage was off the rails across the shed road. The next, a brake-carriage, was on its broadside crosswise between the same sidings, and was attached by one coupling chain to the brake-coach in front of it. The next, a first-class carriage, was off the rails, and was leaning on its right side supported by the footboard. The next, a third-class, had all the wheels off; and the next, a luggage-brake, in which the guard

was travelling, had the hind wheels off. The last three coaches remained coupled together, but were detached from the coaches in front of them, and off the rails. Tocher came to the station on the 2nd of July, and I deputed him to attend to the only points on the main line which are at the north end of the station. He had not previously been in railway employment, so I went with him to the points for the first week after his appointment. He then seemed to understand what he had to do, so I only went to the points with him when the first goods train arrived in the morning when there was some shunting to do. He had attended to the points and worked the signals for all other up trains and had done the work well until the 25th July. One waggon of the up goods that arrived here about noon on the 25th was put in, and one was taken out of the siding. Tocher attended at the points and left them all right, and the up passenger train due at 1.32 p.m. passed the points all right. Tocher was at the points at the time. A down train passed the points all right about 1.50 p.m. and I did not notice them afterwards. I did not notice the points or the state of the indicator, which is close to the points, when I gave the white flag signal to tell Tocher it was all right at the station. Tocher must have been at the points about six minutes before the passenger train arrived. I was on the platform and observed that Tocher was giving a white flag signal to the passenger train. A carter who was loading wood in the yard was killed by the accident. He was picked up from under the composite carriage. The waggon in front had some blood on it. The passengers had all got out before I got to the train. About six passengers complained of being hurt, but none of them appeared to be seriously hurt. They all went away by a special train that was started from here about 4 p.m. I have a clerk at the station as well as the porter, who acts as pointsman. There was nothing done on the line or in the yard after the 1.50 p.m. down passenger train passed that required the points to be altered. They are fixed in either position by a falling iron plate, which can be fixed and locked, and if the points are not fixed by the iron plate they fall into the proper position for the main line as they are weighted to do so. I never have known the points tampered with. I do not know how they could have got into position for the siding unless Tocher moved them. The line is worked by Tyer's block instruments. All changes in the fixed running of trains are made from the superintendent's office. I saw Tocher at the goods shed about five or ten minutes after the accident. I asked him "What is it you have done now?" He replied, "God knows." About 15 minutes after the accident the foreman platelayer found the points fixed with the plate right for the main line. The foreman platelayer was the first man that went to the points after Tocher left them.

John Riach, engine-driver of the 2.40 p.m. train from Fraserburgh on the 25th July, stated: The train was about seven minutes late when I approached Brucklay. I was running about 25 to 30 miles an hour when I passed the Brucklay up distant-signal, which was at danger when I first sighted it, but was taken off when I whistled. I did not observe the indicator-signal, which is close alongside the station siding points, but I saw a man at the points. He was holding out a white flag to tell me all was right. I ran through the points at a speed of about 25 miles an hour and did not know that anything was wrong until I felt the engine swerve on going through the points into the siding. I shut off steam about a mile before reaching the points. When I observed my engine going to the siding I applied the Westinghouse brake which applied the blocks to the driving and trailing wheels of the engine and to the six wheels of the tender, but it was not connected to the train. I did not whistle for the guard's brake. I had not time

before the engine struck some waggons that were standing in the siding. My train left the rails when the collision occurred, and my engine came to a stand at the end of the siding against the waggons and the mound at the end of the siding. I remained on my engine and so did my fireman, and we were not hurt. I have been 32 years in the Company's service and 18 years a driver. I came on duty at 8 a.m.

John Park, fireman of the 2.40 p.m. train from Fraserburgh on the 25th, stated: I did not observe the indicator signal at the Brucklay points, but I saw the man holding a white flag to denote that all was right. I agree with the driver's statement. I have been five years and two months in the Company's service and two years and two months a fireman. I saw the station-master holding out a white flag. He was on the station platform.

John Tocher, having first been informed that he need not give any evidence except he wished to do so, stated: I was porter and pointsman on duty at Brucklay station on the 25th July. I went on duty at 5 a.m. I had been about three weeks and two days in the Company's service. I have no objection to the evidence that I gave to the Company's officer being put in.

Evidence taken by Company's officers.

John Tocher, porter and pointsman, Brucklay, stated: I was 20 years of age on 4th June last. I gave my age as 20 upon my form of application in January 1888, because I was anxious to get employment, and thought I would have a better chance that way, and thought I could manage the work as well as if I was 20. I went to Brucklay on July 2nd, and when I got there the agent explained my duties to me. He showed me the working of the points, both of the main line and of the sidings. For the first three days the agent went with me to the main line

points for the passing of all up trains, and when he ceased going with me I understood what was required of me. I have held the points for all up trains since that time, and there has been no mistake until yesterday. I held the points for the 12.50 p.m. up passenger train yesterday, and they were left locked for the main line. When the 1.45 p.m. down train passed the points were then all right, but were not held, as we do not require to hold them for down trains. The points had not been used since after the passing of the 10.45 a.m. up goods train, which put in a waggon of dung and lifted a waggon of perishable goods for Waterloo. Before it left the points were put right for main line, and, so far as I know, were not again altered until after the passing of 1.45 p.m. down train. About 3 o'clock I was engaged in the yard assisting to load general goods out of a waggon into a carrier's cart, when Mr. Cooper, the agent, came to me and said the mail was signalled on from Strichen, and I had better run down to the points, which I did. When I got to the points I first drew the distant-signal, the lever of which is about four yards from the lever of the points on the same side of the line. I then got my white flag out of the pointsman's box, and stood with it in my hand, looking in the direction the train was coming, until the engine was 8 or 10 yards from the points. I then turned and put my hand upon the point lever, and at once saw that the points were wrong. I had not touched the point lever after drawing the distant-signal until I put my hand on it and found it wrong, and it must have been lying wrong when I got to it from the station yard. I do not know who could have altered it after the passing of the 12.50 p.m. and 1.45 p.m. trains. I did not see anyone about the place interfering with the points. I did not look to see whether the points were right until the engine was close at hand. I know I should have done so, but I was confused owing to having had to run down to the points.

Conclusion.

This collision was caused by the mistake of a young and inexperienced pointsman calling the passenger train on when the points were set for the siding. He had only been in railway employment for 23 days.

The facing-points which he was attending to, were not interlocked, and the custom at Brucklay station, of using a white flag to signal the trains forward, was calculated to divert the driver's attention from looking for the fixed signal.

The pointsman had been on duty 10 hours, and the driver seven hours when the collision occurred.

All the circumstances connected with this collision point to gross neglect on the part of the Company.

1st. There is a single line which is worked without a train staff or train tablet.

2nd. There are facing-points on the passenger line which are not interlocked with the signals, although this is absolutely necessary to provide for safe running, and the system of interlocking has been in use for 30 years.

3rd. A young and inexperienced man was employed to work the points.

I recommend that all these deficiencies should be altered without further delay.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

F. H. RICH,
Colonel, R.E.

APPENDIX.

GREAT NORTH OF SCOTLAND RAILWAY COMPANY.

PERMANENT WAY AND TELEGRAPH DEPARTMENT.

DEAR SIR, Aberdeen, 9th August 1889.

THE following is a list of the damage to the permanent way in the goods yard at Brucklay station by the accident to 2.40 p.m. up train on the 25th ultimo.

1st. No. 1 or goods shed siding—

2 rails displaced.

1 rail broken.

27 chairs broken.

2nd. Middle and No. 3 roads—

16 rails broken or twisted.

40 sleepers and 172 chairs broken.

1 set switches and the end of the carriage dock damaged.

Part of the above damage was caused in re-railing the damaged vehicles.

Yours truly,

Colonel Rich, R.E. ROBERT BARNETT,
Inspecting Officer, Engineer.
Board of Trade,
Whitehall, London.

Great North of Scotland Railway,
Locomotive Department,
Kittybrewster Station,
Aberdeen, 13th August 1889.

BRUCKLAY ACCIDENT, 25th July 1889.

Damage to Stock.

Vehicles composing the 2.40 p.m. up train from Fraserburgh :—

No. 68 Engine.

Bogie.—Front stay plate, front carrying girder, right and left leading axleboxes, leading axlebox guides, and left front trailing axlebox guide, all broken; springs and spring hangers, leading axle, and left frame-plate bent; wheel guards broken.

Smoke-box.—Front plate and door bent and twisted, chimney knocked off, and chimney top broken; hand-rail broken.

Cylinders.—Bogie centre seat and bolts broken.

Frame.—Front buffer beam, gangway plate, foot-steps and angle-irons bent and twisted; front buffers broken; driving axlebox guides, left side, broken.

Brake.—Brake block cams and tie rods on right side broken.

Injector.—Flange of right injector broken.

Open Box Waggon, No. 2545.

Two axle-guards bent; three axlebox undercovers broken.

Low-sided Waggon, No. 387.

Axles slightly bent; one axlebox and four undercovers broken.

Open Box Waggon, No. 26.

One axle-guard bent; three axlebox undercovers broken.

Covered Goods Van, No. 923.

One axle, four axle-guards, and four spring hangers bent.

Covered Goods Van, No. 918.

Cant rail, end top rail, end lining and two side pillars broken. One draw-bar, one axle-box and four undercovers broken. One buffer-rod and one axle guard bent.

Open Box Waggons 1,552, 1,334.

Woodwork destroyed. Ironwork bent and twisted, and axles bent.

Composite Carriage, No. 21.

One end completely smashed in. Two panels of other end damaged. Two bottom foot-boards broken, and hangers bent. One door-glass, and one quarter light glass broken. Air-pipe damaged. One buffer-rod, and axle guards bent.

Brake Third Carriage, No. 5.

One corner pillar, one side pillar, and two door pillars broken. Eight end panels damaged. Foot-boards broken and hangers bent. One link of screw coupling broken.

Brake Third Carriage, No. 22.

One end completely smashed in. One headstock damaged. Two side panels broken. Foot-boards all broken, and hangers bent. Four door-handles broken off.

First-class Carriage, No. 25.

One corner pillar and one end panel damaged. Two foot-boards broken, and hangers damaged. One buffer-rod and one draw-bar bent.

Third-class Carriage No. 60.

One end panel damaged. One buffer-rod bent.

Passenger Luggage Van, No. 16.

Axle guards slightly bent.

Great North of Scotland Railway,
Locomotive Department,
Kittybrewster Station,
Aberdeen 13th August 1889.

BRUCKLAY ACCIDENT, 25th July 1889.

Damage to Stock.

Vehicles which were standing in siding at Brucklay :—

Open Box Waggons, Nos. 78, 1879, and Low-sided Waggon, No. 473.

Woodwork completely destroyed. Ironwork broken and twisted. Axles badly bent.

Covered Goods Van, No. 914.

Cant rail, two corner pillars, end beam, and end linings broken. Four axle guards and four spring hangers bent.

Open Box Waggon, No. 1,022.

Two end pillars and end linings broken. Two axle-guards and two buffer-rods bent.

Open Box Waggon, No. 692.

One headstock broken. Four buffer-rods bent. Two buffing springs broken.

Caledonian Railway Waggon, No. 5,986.

One headstock, two end pillars, and end linings broken. One axle box broken, and draw-bar bent.

Printed copies of the above report were sent to the Company on the 18th September.

GREAT NORTH OF SCOTLAND RAILWAY.

Board of Trade, (Railway Department,)
1, Whitehall, London, S.W.,

11th December 1889.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 23rd ultimo, the result of my enquiry into the causes of an accident which occurred on the 21st ultimo at Huntly station on the Great North of Scotland Railway.

In this case the 7.40 p.m. up passenger train from Keith, (consisting of engine and tender, brake-van, one composite, one third-class brake, one first-class, and one third-class carriages, and rear brake-van, all fitted with Westinghouse brake), when entering Huntly station at about 8.18 p.m., was turned at the north loop points on to the down loop line, and came into collision with the 7.0 p.m. down passenger train from Aberdeen (consisting of engine and tender, three composite carriages, and one third-class brake carriage), the engine of which was standing about 70 yards inside the loop points.

The down train was driven back for 53 yards, but the only wheels thrown off the rails were the trailing wheels of a Caledonian carriage next behind the tender. The two leading carriages were buffer-locked, but none were telescoped.

In the up train no vehicle left the rails.

Twenty passengers are returned as having complained of injury, but it is stated that only three or four are seriously hurt. The driver of the up train and the fireman of the down train were badly injured.

There were no damages to the permanent way, but the damage to the rolling stock, of which a return is appended, was considerable.

Description.

Huntly, which was for some time a terminal station, has two platforms under a shed, and a long passing loop.

The north loop points are 82 yards north of the shed, and the platforms are extended a little to the north of the shed.

The points and signals are not interlocked, and the facing-points are not fitted with facing-point bolt or locking-bar.

The up and down home-signals are upon a post upon the platform, 81 yards inside the north loop points, and the up distant-signal is 446 yards north of the points.

The points are worked by hand, but there is a disc-signal or indicator, about 10 feet high, working with the points.

This indicator should show a red light northwards, when the points are lying for the down loop, and a green light when they are right for the up loop.

The points are worked from the side of the line by a lever, which moves backwards and forwards in a slot in a quadrant. The lever is weighted so as to lie for the down line, but there is a bar across the slot by means of which the lever can be fixed in the position for either up or down lines.

It is not usual to fix the lever by means of this bar when the points are lying in a trailing direction, that is in this case for the down line. The man holding the points must receive a signal from the station by the lowering of the home-signal before he lowers the distant-signal, and he should satisfy himself that the line is "clear for the advance of the train" before he lowers the signal.

When the train is approaching, he should if the "line is clear for the train" show a green flag by day or lamp by night.

He is also enjoined to try the points before the train is due.

A copy of the rules of the Company affecting the working of the points is appended.

The line north of the points is upon an easy curve, but the light in the indicating disc-signal, and a hand-signal at the points can be seen from an approaching engine for about 300 and 200 yards respectively.

Evidence.

John Willie states: I have been in the service since April 1888 as a porter, first at Drummuir, and at Huntly since May 1889. At Drummuir I was pointsmen and porter, and at Huntly I have been at general work as porter and night pointsmen. My father is signalman and porter at Garmouth, and before entering the service I was out of work, and employed my time in learning a signalman's duty

from my father. I was so employed for about four months. On the 21st November I came on duty at 4.30 p.m. until 5.30 a.m. on the following day. I had left duty at 5.30 a.m. on the morning of the 21st November. Up to about three months before this I had been employed at the south end as pointsman but occasionally for goods trains at the north end. Since the alteration of duties I have been regularly employed at the north end, as well as the south, for about a month. The points are worked in the same way at both ends. The up distant-signal is worked by a lever close to the points, and the points are worked by a separate lever, which is weighted for the down line and has to be held for up trains. There is a bar across the slot in which the lever works to secure the points either way. The distant-signal is not allowed to be lowered unless the semaphore at the platform has been taken off. The order is for the points to be held in the right direction for all trains coming in, and for a green flag or light to be shown to the driver. Working with the points there is a high disc indicating signal which shows a red light when the points are lying for the down line and a green light when they are lying for the up line. The lamp is trimmed by pointsman Jessiman, and it is lighted in the afternoon by porter McKimmie. After coming on duty on the 21st I let in the 3.35 p.m. down passenger train at the south points at about 4.49 p.m. I went then to assist at the goods shed. I then went again to the south points to let in the 3.20 p.m. down goods train at about 6.20 p.m. I then let in the 5.0 p.m. down passenger train at the same end at about 6.53 p.m. I then went home for supper and came back at about a quarter to eight. I came to the office and found that the 5.45 up train from Elgin, the 7.40 p.m. from Keith, was on line, and I went straight to the north points, after lighting my hand-lamp. The train is due at 8.13 p.m., and I got to the points at a few minutes past 8. The train was five minutes late. The 7.0 p.m. down passenger train due at 8.13 had just arrived when I went down to the points, and when I got to the points the up semaphore was drawn. I found that the lamp in the disc-signal was showing no light. It was smoking. I went up and took down the lamp, and tried to make it burn. I then lowered the distant-signal, and continued to try to make the lamp burn. I was cleaning the glass. The points had not been pulled over for the up line, but were lying for the down line. I should have pulled them before I took off the distant-signal. I heard the engine whistle sounded. I at once left the lamp on the ground, and then put the distant-signal back, and then turned to the points to pull them over for the up line. At that time the engine of the up train was in sight coming round the curve. I tried to pull the point lever, but found the catch was on. I stooped down to loose the catch, but before I could do so, the engine was on to the down line. My hand-lamp was in my hand, and it was showing a green light towards the driver. I made no attempt to show a red light as I thought I would be able to release the catch and get the points over in time. The train was running no faster than usual. There was no steam on, but I cannot say whether the brake was on or off. I usually pull the points before the train is in sight, but on this occasion I was trying to get the disc lamp to burn, and when I went to the point lever I was prevented from pulling it by the bar which I did not know was across the slot. I shall be 25 years of age on the 7th August 1890. I have never before found the bar across the slot when I went to pull the points for an up train. The points had last been worked at about 7 o'clock, when the engine of the 5.0 p.m. down train had to lift two or three carriages from the up loop. Porter Keir worked the points on that occasion. I had not seen anyone at or about the points just before I went to them.

James Keir states: I have been in the service for 4½ years as porter, all the time at Huntly, except for about 5 weeks when I was temporarily employed at Fraserburgh. On the 21st November I came on duty

at 6.30 a.m. My duty lasts until 8.13 p.m. The 5.0 p.m. down passenger train arrived a few minutes late. There was three carriages on the up line which had to be attached. The engine was therefore uncoupled, taken forward over the north loop points and backed on to the carriages and then taken back to its train. I worked the north points for this operation. When I first went to the points I found them lying for the down line, but the bar was not across the slot. When the engine backed to the carriages I held the points, and again when it backed on to the train. When I left the points I left them lying for the down line. I am quite certain that I did not put the bar across. This is never done when the points are lying for the down line. The disc-signal lamp was burning brightly when I left. I have frequently had to hold the points and do pointsman's duty when required. I have always had to attend to the points for the 5.0 p.m. down train. I am allowed an hour for my dinner and an hour for my supper during the day.

George Jessiman states: I have been about 20 years in the service as pointsman, all the time at Huntly. I am a day duty man from 2.0 a.m. to 3.0 p.m. with about two hours off for meals. My duties comprise attending to the points and also attending to the signal lamps and trimming the oil lamps. On the 21st November I trimmed among others the disc lamp for the north points. All lamps smoke at times, but this one no more than others. I am sure that I trimmed it properly on that day. I saw it on the morning after the accident, and it was then all right. I heard that it had been smoking and had been cleaned and retrimmed.

John McKimmie states: I have been almost 8½ years in the service, all the time at Huntly. I am porter and pointsman. Part of my duties consist in lighting the signal lamps, and part in collecting tickets. On the 21st November I lighted all the signal lamps at Huntly, among others the north points disc lamp. This was burning properly up to 5.30 when I last worked the north points.

Alexander Davidson states: I have been 16 years in the service, and a driver for five years. On the 21st November I came on duty at 9.30 a.m. at Elgin, and my turn of duty lasted until 10.20 p.m. I am off duty at Aberdeen for five hours at a stretch. I went off duty at 10.20 p.m. on the previous day. My engine (No. 18) is a four-wheeled coupled engine with leading bogie. I was attached to the 7.0 p.m. down passenger train from Aberdeen to Elgin with four vehicles on. It was fitted throughout with the Westinghouse brake. I arrived at Huntly at 8.16 p.m., three minutes late, and I stopped with my engine funnel just outside the north end of the loop of the station. I had to cross the 7.40 p.m. up train, which had not arrived when I ran in. I got off my engine on the near side to do some oiling, and got on to the footplate at the leading end. Someone on the platform cried out to me to jump, and I leaped on the platform just before my engine was struck by the engine of the up train. I should estimate the speed of this train at about 10 miles an hour. The speed in running into through stations is higher with trains fitted with continuous brakes than with others not so fitted. My train was driven back for over 50 yards, and the carriage next the engine had the rear pair of wheels off the rails. My engine was a good deal damaged in front. My brake was off at the time. I went after the collision to examine the other engine, which came to a stand at almost the exact position which my engine had occupied. I found it in reverse gear, and the brake on. The front brake pipe was broken. The driver of the up train was badly injured. My fireman was on my engine and he also was badly hurt.

Stewart Robertson states: I have been 17 years in the service, and fully 15 years a guard. On the

21st November I came on duty at 11.40 a.m. for 10 hours. I was guard of the 7.0 p.m. down train from Aberdeen. It was made up as follows.—Engine and tender, three composites, and a third-class brake carriage, all fitted with the Westinghouse brake. We started at right time, and we were three minutes late on arriving at Huntly. When the collision occurred I was standing on the footboard of the carriage next to the engine. I was thrown off on to the platform, but did not fall down. My train was driven back for about 50 yards. The carriage next the engine, a Caledonian carriage, had the trailing wheels off the rails. There were no carriages telescoped, but the two leading carriages were buffer-locked. There were perhaps about 40 passengers. I think that 12 complained of injury. Most of these were in the second carriage.

Samuel Watt states: I have been nine years in the service, and a fireman for six years. On the 21st November I came on duty at Kitty Brewster at 1.0 p.m. with driver James Chalmers. My tour of duty was until 11.0 p.m. The engine, No. 74, is a four-wheel coupled engine with leading bogie. We left Keith at 7.40 p.m., and picked up the Elgin passengers at Grange. There were six carriages on the train, which was fitted throughout with the Westinghouse brake. On approaching Huntly, the distant-signal was at danger when we sighted it. It was drawn after we had twice whistled and when we were close on to it. We were then running at about 10 miles an hour. The disc-signal at the north points is visible for about half the distance to the distant-signal, or perhaps scarcely so much. This signal was not visible at all that night, as I believe the lamp was out. We did not whistle for it, but we sighted the green hand-light shown at the points when we were about 70 yards away. The whistle was not sounded at all between the distant-signal and the points. I am sure of this. The green light was being gently waved in the usual manner. We came forward at about 10 miles an hour, the usual speed, thinking that the points were set in the proper direction. We did not find out that we were turned on to the wrong line until we missed the usual swing of the engine running on to the up loop line. At that time our steam was off and the brake was slightly on. Steam had been shut off first when the distant-signal was seen at danger, applied again slightly, and shut off again inside the distant-signal. The brake had been slightly on from about half-way from the distant-signal. My driver shouted out to me, and I to him. The driver put the Westinghouse brake hard on, and got the reversing lever over, but had no time to apply steam. I remained on the footplate, and was not injured. I do not know whether my driver jumped off or was thrown off. He was badly hurt. I think we were running above five miles an hour when the collision occurred, but I cannot say how much. Our engine was a good deal damaged, but it did not run forward very far after driving the other train back. I do not consider that it is the duty of a driver to stop at a disc-signal which is not showing a light, so long as he is getting the proper hand-signal from the pointsman at the points. I have known this happen occasionally, and the pointsman's lamp has always been considered sufficient.

John Lunes states: I have been 13 years in the service and 10½ years a guard. On the 21st November I came on duty at 12.45 p.m., for nine hours. I was guard of the 7.40 p.m. up train from Keith, consisting of engine and tender, brake-van, composite, third-class brake, first-class, third-class and brake-van in which I was riding. We had Westinghouse brake throughout in good order. We left Keith at right time and Rothiemay at 8.8, five minutes late. On approaching Huntly I noticed, after passing the distant-signal, that the disc-signal was not showing. The distant-signal was not drawn for us until after it had been whistled for twice. My

driver checked his train slightly on finding the distant-signal against him. I did not take any steps to stop the train on finding the disc-signal was not showing a light. I saw the pointsman showing the green light and waving it gently, so I thought it was all right. I think that the hand-light at the points can be seen for about the same distance as the disc-signal, that is, for more than half of the distance to the distant-signal. I had no idea there would be a collision until the engine was over the points. I turned at once to apply the Westinghouse brake, but before I could do so the driver had put it on. I estimate our speed, when the collision occurred, at about five miles an hour. I was slightly hurt, but have not been off duty. None of my train left the rails. One or two passengers in my train complained of injury. It was not a full train. We did not get off until about 1.0 a.m. on the 22nd. I heard no whistle between the distant-signal and the points.

The following are statements made by the driver of the up train and the fireman of the down train, who were unable to appear at my inquiry:—

Statement by *James Chalmers*, age 54, 24 years in the service, 10 years a driver.—I was driver of the 7.40 p.m. from Keith on 21st November. We left Keith at time, and were five minutes late from Grange waiting coast passengers. On approaching Huntly the distant-signal was at danger, and I whistled for it and shut off steam. Not getting the signal, I whistled a second time and we got it. We would be about 300 yards from the signal when it was lowered, and the speed of the train was much reduced, so that when we got the signal, steam had to be put on for a little, but was again shut off shortly after passing the signal. When at the distant-signal, I saw that the home-signal was standing right for us, and then noticed the pointsman's hand signal-lamp waving us gently on, and this I continued to observe until the engine was getting well up to the points. I did not perceive any light on the disc-signal; my impression is that it was not lighted. Before reaching the points, I made a gentle application of the brake, and as soon as the engine was on the points, I both saw and felt that we were being sent on to the down platform road, and that a collision was inevitable. I put the air-brake full on and reversed the engine, and had no sooner done so, than we collided with the 7.0 p.m. and I was knocked off the engine. I was rendered unconscious for a few minutes and sustained injury to right shoulder, right hip-joint, and right side of head. I was taken to Mrs. Yule's house, where I was examined by Dr. Thomson, and I went home passenger that night. When entering the points I consider that the speed would not exceed six miles an hour, and we could have stopped at the usual place on the up platform road with a slight application of the brake.

Statement by *John Walker*, age 28.—I have been in the service about 11 years and nearly six years a fireman. On the 21st November I was fireman of the 7.0 p.m. down train, Aberdeen to Elgin, and arrived at Huntly at 8.16 p.m., three minutes late, having been stopped at Buxburn, the line not being clear of 6.45 p.m. down Buchan train. When we drew up at Huntly the engine was opposite the clock on the down platform, driver making it a point to pull up there as the light from the platform lamp enabled him to see to fill up his cylinder lubricators without using his own hand-lamp. On the night in question, after we had stopped, I proceeded to fill up the fire and was in the act of doing so when the collision occurred. I was knocked down on the footplate, my back coming in contact with the hand-brake and hand-rail. After a little I got up and stepped off the engine on to the six-foot way. I observed that our train had been driven back a considerable distance, and that one of the carriages was off the rails with a pair of wheels. I was sick and confused and someone assisted me on to the platform. I recollect speaking to Davidson, my

driver, and saying I was hurt, and getting a drink of water, and being put on to engine of 7.40 p.m. up train to be warmed, I being cold, but have no

distinct recollection of what occurred after that, further than that I got into a carriage and came to Elgin passenger. I have been unfit for duty since.

Conclusion.

This collision, which would probably have resulted in far more serious consequences had it not been for the satisfactory action of the continuous brake, with which the up train was fitted, and which was promptly applied by the driver, was caused by a blunder of the pointsman, John Wilkie, who did not carry out the operation of admitting the train in accordance with the rules of the Company, and seems to have lost his head when the collision was imminent.

This man did not go to the points until he had ascertained at the station that the train had left Rothiemay, the next station northwards, and when he reached them he at once took off the distant-signal—the home-signal, worked from the platform, having been already lowered—without first setting the points in the right direction for the up line, as he admits he should have done, and the necessity for which is certainly implied by Rule 46, although it is not very clearly explained. Neither did he try the points before the train was due, in accordance with Rule 86, having delayed going to the points until some minutes after it was due.

When he arrived at the spot, he found that the light in the disc-signal was not showing any light, owing to the smoking of the lamp, which he took down to retrim, and he occupied himself in doing this until the train was inside the distant-signal, and so close to him that when he turned to pull over the points the unusual fact of the catch being across the quadrant was sufficient to prevent him from pulling them over in time. Even then, if he had had the presence of mind to show a red light to the driver, the collision might have been averted, or at any rate the force of it might have been considerably mitigated, but he evidently got confused, and continued to show the green light with which he had been calling the driver on.

It is thus apparent that no collision would have occurred if the pointsman had either tried the points when he first reached them, had pulled them over for the up line before lowering the distant-signal, or had shown a danger-signal to the driver instead of a green or caution signal, until such time as he had set the points right.

He is a young man of good character, and had at the time been on duty for a little under four hours, and although he had only been in the service seven months he had been properly instructed in the duties of pointsman.

There is some discrepancy between his evidence and that of some of the other men but, although I think that he is wrong in his statement that the engine whistle was not sounded for the distant-signal, and that it is doubtful whether his evidence as to the catch being across the quadrant is correct, I believe that he intended to make a straightforward and truthful statement.

If the light in the disc-signal had been burning, it would have shown to the driver a red light until the points were properly set, and as it was showing no light at all it ought to have been considered a bad signal, and treated as a danger-signal. I do not, however, think that blame can be attributed to the driver for not so considering it, for it is quite clear, from what transpired at the inquiry, that it has been the recognised custom on this line for drivers to take the “all right” hand-signal of the man at the points as a sufficient guarantee that the points are properly set, and to pay little or no attention to the disc or indicating-signal. This is, however, a most dangerous practice, and the Company should lose no time in issuing a circular to warn drivers that unless *both* the disc and the man at the points are showing an “all right” signal, they are to bring their trains to a stand as if the signal were a danger-signal.

Finally I must draw attention to the fact that this collision would not have occurred upon a line properly signalled and with the points and signals interlocked; so that it may be fairly attributed to the absence of these safeguards, the provision of which cannot under recent legislation be long delayed.

It is only right, however, to point out that the Great North of Scotland Railway Company have been for some time past doing a great deal to improve their main line by doubling and relaying operations and by interlocking, and that all the stations south of Huntly have been already interlocked, the order having actually been given for the necessary work to be done at Huntly and some stations to the north of it.

I have, &c.,

F. A. MARINDIN,

Major, R.E.

The Assistant Secretary,
(Railway Department), Board of Trade.

APPENDIX.

EXTRACT from RULES and REGULATIONS of the GREAT NORTH OF SCOTLAND RAILWAY.

Distant Semaphores.

Rule No. 46.—On the approach of a train, the signalman must satisfy himself that the line is clear for the advance of the train before changing the signal; when so satisfied, he must turn on the caution-signal to allow the train to proceed.

Hand Signals.

Rule No. 72.—On the approach of a train, the signalman must satisfy himself as to the state of the line at the time before exhibiting any but a danger-signal. If the line is clear for the train, he must exhibit the caution-signal.

Rule No. 86.—The duties of the men attending to points are very simple and easily understood, but require great care and attention, for any neglect may cause accidents. Men in charge of points must therefore always be alert and cautious in the discharge of their duties. They must also try the points before a train is due, in order to be certain that there is no impediment to their working. Where there are facing points these precautions became doubly important.

Rule No. 88.—Each pointsman on duty must stand by his lever or signal handle, clear of the rails and give the proper signal before the passing of an engine or train.

Rule No. 130.—In case of a semaphore or disc-signal being out of order or under repair, a hand-signal shall be exhibited at the signal post.

COLLISION at HUNTLY, 21st November 1889.

Damage to plant on 7.40 p.m. up train ex Keith.

No. 74 Engine.—Both cylinder levers broken. Studs for carrying engine-centre broken. Motion bar stay-plate broken. Outside frames broken and inside frames bent back to cylinder. Buffers and buffer-beam broken. Drawbar and angle-irons broken. Right leading guide broken. Westinghouse piping on front of engine broken. Gusset stays for outside frame at back of bogie torn away.

Printed copies of the above report were sent to the Company on the 24th December.

P.L. Van, No. 30.—One buffer-guide, one axle-box one door-glass, and one end-glass broken. One buffer-rod bent.

Composite Carriage, No. 31.—One buffer-beam, two buffer-guides, one end-rail, one drawbar, two side chains, and two quarter-light glasses broken. One laminated spring and footboard damaged. Three buffer-rods bent.

Third-class Brake Carriage, No. 14.—Three centre-beams, one buffer-guide block, and one quarter-light glass broken. Four buffer-rods bent and one footboard damaged.

First-class Carriage, No. 49.—One buffer-beam, two buffer-guides, and one axle-box broken.

Third-class Carriage, No. 160.—One quarter-light glass and one buffer-guide broken, two buffer-rods bent.

P.L. Van, No. 33.—One buffer-beam, two buffer-guides and three axle-boxes broken. One buffer-rod bent.

Damage to plant on 7.0 p.m. down train ex Aberdeen.

No. 18 Engine.—Engine centre casting broken. Two back snugs broken off cylinder and studs bent. Buffer-beam bent. Two outside frames bent at fore-end. Angle-iron frame for ditto bent. Buffers smashed. Intermediate buffer on tender broken. Bracket for relief cocks broken. Left trailing guide of bogie broken at staybolt.

C.B. Composite Carriage, No. 230.—Two buffer-beams, one centre-beam, three buffer-guides, and four buffer-guide blocks broken, also one quarter-light glass broken and two buffer-rods bent.

Composite Carriage, No. 24.—Three buffer-guides and one end-beam broken. One quarter-light glass broken. Three buffer-rod bent, and end damaged.

Third-class Brake Carriage, No. 38.—One buffer-guide and a door-glass broken. Two buffer-rod bent, one end damaged and body shifted.

Composite Carriage, No. 2.—One buffer-guide broken.

GREAT WESTERN RAILWAY.

Board of Trade, (Railway Department),
1, Whitehall, London, S.W.,
7th September 1889.

Sir,

In compliance with the instructions contained in your Minute of the 15th ultimo, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances which attended the collision, that occurred on the 2nd ultimo, at North Road station, Plymouth, of the Great Western Railway.

That part of the train due to leave Penzance at 11.15 a.m., which consisted of a tank engine and four eight-wheel coaches, was shunted back into the loading bank siding at North Road to pick up the two coaches from Plymouth which were to be taken on to London. The Penzance portion of the train was pushed back too fast, struck the Plymouth coaches, and drove them against the stop-buffers at the end of the siding.

Two passengers complained of being slightly hurt. The Plymouth coaches were hooked on to the Penzance portion as soon as the two parts of the train came together

and no vehicles left the rails. No damage was done to the permanent way, but two axle-boxes on one of the Plymouth coaches were broken. The engine was fitted with a steam-brake and a screw-brake, and was connected to the coaches which came from Penzance with the automatic vacuum-brake, which was controlled by the driver and the guard. The Plymouth coaches were also fitted with the automatic brake, but the vacuum pipe had not been connected.

Description.

The line from Penzance joins the line from Plymouth at the west end of the North Road station. The up and down main lines run through the centre of the station, and there are loops from the main lines to the down as well as the up platform. The Penzance train ran to the up platform and was backed into the loading bank siding, which is at the west end of the station, and at the west side of the platform loop-line. The gradient at the platform is 1 in 225, and the line from the point of junction with the siding and loop-line to the stop-blocks is practically level. The Penzance portion usually arrives at North Road before the Plymouth portion of the train, but the train from Penzance on this occasion was about 14 minutes late. The Penzance portion of the train was backed to the two coaches from Plymouth by hand-signal from the yard shunter, who stood near the Plymouth coaches at the main line side of them. These coaches stood a few feet from the stop-blocks at the end of the siding.

Evidence.

Geo. Edward Bagshaw stated: I am a porter in the Great Western service, employed at North Road station. On 2nd August I came on duty at 6.30 a.m., and went to breakfast from 7.0 a.m. to 8.0 a.m., and to dinner from 12.2 p.m. to 1.2 p.m. In consequence of foreman Dyer being absent on leave, I was instructed by Mr. Bell (the station-master) to act in his place, beginning on August 1st. It was my duty to shunt the 2.8 p.m. train ex Plymouth, and the 11.15 a.m. ex Penzance, and I did this work on August 1st. On August 2nd, the 2.8 p.m. ex Plymouth, which consisted of two coaches (a composite and a third), reached North Road station just at 2.12 p.m., the proper time, and was placed in the loading bank siding at the west end of the yard. When the 11.15 a.m. train from Penzance arrived at 2.20 p.m., the 2.8 p.m. train engine went ahead, and took away the two rear coaches of the 11.15 a.m., to enable the Penzance portion of the train to back into the siding, to pick up the two coaches which came from Plymouth. I gave a signal to the driver of the 11.15 a.m. train to back into the loading bank siding to pick up the coaches referred to. I waved a green flag as an indication to him to come back, and continued to wave it until the rear coach of the 11.15 a.m. train had reached the end of the up passenger platform. I then held the green flag steady towards the driver as an indication to him to come very steadily; the speed was checked, but very little; the train seemed to be coming back as usual. Shortly after I saw that the driver was coming back too fast, and I then showed a red flag; the driver did not seem to notice the red flag; the speed did not seem to be checked, and the 11.15 a.m. train came up too fast against the Plymouth coaches. I was holding up a red flag at the time of the collision, and I had been holding it towards the driver for about 10 seconds. I did not think it necessary to show the red flag before I did. The effect of the collision was that the coaches were severely shaken all through the train. I saw a passenger's hat fall out of one of the windows of one of the Plymouth coaches at the time of the collision, and I picked it up and handed it to him. I did not hear any complaints of injury. I did not know that an axle-box of the leading Plymouth coach had been broken until the carriage examiner told me that the coach would have to come off. The passengers and luggage had to be transferred into one of the coaches that had previously been detached from the 11.15 a.m. train,

and placed in the down straight line. I consider that the cause of the collision was the driver failing to notice my signals. I have been about six years in the Company's service, and although I am not the regular station-shunter, I have done this kind of work for about 3½ years. I heard porter Hodge, who was waiting to couple up the coaches, shout out, "Show your red flag!" and I immediately did so. When Hodge called to me I think there was a space between the coaches in the siding, and the rear coach of the train that was coming back, of nearly a coach length. I was expecting every moment that the driver would put on the brake. I had exhibited the red flag to the driver of the same train the day before without being called on to do so. On this day there were more coaches from Plymouth, so they were left on the main line instead of being put into the siding. The two coaches that the passenger train was backed on to were not close against the stop-buffers. I cannot say what distance they were from the buffers. The two coaches were knocked against the stop-buffers, but nothing left the rails. Neither the permanent way nor stop-buffers were damaged.

Engineman William Coleman stated: On the 2nd August I worked the 11.15 a.m. train ex Penzance. It consisted of four eight-wheel and one six-wheel coach; on arriving at the North Road station I was backing four eights into the siding to pick up the Plymouth portion of the train. I was going back very steadily; the shunting porter was at my side of the train, he was waving a green flag. I went back as slowly as I could against the coaches, and when I came up against them I felt no shock or nothing amiss on the engine. Shortly afterwards, however, the examiner came and told me we had broken an axle-box of one of the coaches we had come against. I was surprised, as I had gone up very gently according to "green flag" shown to me. It could not be said that it was caused by the force I went back, but it must have been the weight of the eight-wheel coaches that I had on, coming against the others which were standing against the stop-buffers in the siding. If the shunting porter had shown a red flag I could have pulled up short of the train, but we could not go back steadier than I was running, as it proved by the shunter showing a green flag all the time. The damaged coach was shunted off, causing about 20 minutes delay. The examiner saw that the shunter did not show a red flag. I did not see that the shunter showed a red flag

before my train struck the two coaches in the siding. I have been 29 years in the Company's service, nearly 16 years a driver, and eight months a regular passenger train driver, but I have driven passenger trains frequently for four years. I have frequently backed my train to pick up coaches in the same siding. They have always been eight-wheeled coaches with that train. My engine was a side-tank engine, driving and trailing wheels coupled. I had an independent steam brake, a vacuum brake which acted on all the coaches, and a screw-brake. The fireman was using the screw-brake to steady the train as I backed down the siding. I came on duty at 3.35 a.m. that morning. I had run the down mail from Plymouth to Penzance that morning. I had run the 11.15 a.m. from Penzance, and was going to Newton Abbot with that train. I then return from Newton Abbot to Plymouth with the 4.55 from Newton Abbot, which is due at Plymouth at 5.55 p.m., and that would end my day's work. I cannot say at what speed I struck the coaches, it was so slow. The rails were perfectly dry, and I could have stopped at once if I had been shown a red flag and applied my steam-brake, which I did not. I have never been reported for passing signals at danger, nor have I ever been reported for disobeying signals in shunting.

William Giles, fireman, stated: I have been a fireman about 7½ years. I fired to driver Coleman on the 11.15 a.m. train ex Penzance on August the 2nd. I remember going into the siding at North Road to pick up the Plymouth coaches. I could not see the shunter. I was at the left side of my engine, but I was taking signals from my mate. I had the hand-brake on "easy." I did not receive a stop-signal from my mate, and consequently did not have the brake on tight when the collision occurred. My mate said "green flag" twice, and "steady" more than twice, and I put the brake on "easy." The engine did not move ahead when the coaches came together. I went on duty that morning with Coleman. My train was going very slowly at the time of the collision. I had never worked the shunting of the 11.15 passenger train at North Road before, and had done very little shunting of passenger trains. I had been appointed a passenger fireman six weeks, and had been a goods fireman 7½ years. The driver did not desire me to apply the brake on the 2nd instant. I had it on "easy," and did not tighten it before the collision.

Ralph Woodcock, examiner, stated: On the 2nd August I went to North Road station to examine the 11.15 a.m. train ex Penzance. It is customary for me to do so in my proper turn of duty. When the 11.15 a.m. train was backing in the siding to pick up the Plymouth coaches I rode on the steps of the last coach, on the platform side. The train did not go back faster than usual. I saw the shunter showing a green flag; he was holding it up in his right hand. He was standing between the two sidings, and was at the right or off side of the train that was being backed. He had a red flag in his left hand, which was down by his side. I noticed him all the time, and he did not show the red flag to the driver. When the coaches were about two yards apart I ran towards the railing of the siding, which was at the left side of the train, to signal to the driver, but I was too late. The green flag was held up until I had jumped off, which was when the Penzance portion was about two yards from the Plymouth portion. I rode back on the Penzance coaches, in order to examine the vacuum-pipes on the Plymouth portion of the train. I noticed no check put on the train, and that caused me to look at the signalling. The shunter was standing about parallel to the buffers of the Plymouth coach. I have been about nine years in the Company's service, and 6½ years a coach examiner. I have been in the fitting shops at Swindon.

Thomas Hodge stated: I am a porter at the North Road station, and have been here about three years.

I have been seven years in the Company's service. On August the 2nd I stayed in front of the two Plymouth coaches, which were in the loading bank siding, to couple them to the 11.15 a.m. train ex Penzance. I have done this work for about three years. The Penzance coaches came back much more rapidly than usual; in fact, I have never known them to come back so fast before. The train from Penzance was late. I called to porter Bagshaw, who was the acting foreman, when the coaches were about 30 feet apart, to show the red flag, and he did so, but when I looked again, after picking up the coupling, there was only a space of 5 or 6 feet between the coaches. I saw a red flag shown just as the coaches covered him from my sight. The collision occurred almost instantly after I had called out to him to show the red flag. I remained between the coaches and coupled them together. The effect of the collision drove the two Plymouth coaches against the buffers. These coaches were standing 2 or 3 feet from the buffers, and they rebounded. I was not struck by the coaches. I then got on to the loading bank and I saw passengers rising from their knees in the three last compartments of the rear coach of the Penzance portion of the train. Some bundles of rugs, &c. had fallen from the racks. I gave the driver right to go ahead to the station, and he did so. When I got to the up passenger platform a passenger came to me and said, "Look at what you have done to my hat." It was a high white hat, and it was crushed in. No passengers complained to me of injury. I had hooked the coupling of the Plymouth coaches on to the Penzance portion of the train as soon as the two parts came together.

Henry Mortimer stated: I am a ticket collector at North Road station, and was on duty on August the 2nd when the 11.15 a.m. train ex Penzance arrived. I saw it start from the passenger platform to back into the loading bank siding for the two Plymouth coaches. After the train had returned to the platform two gentlemen came to me; one said he had hurt his thumb through getting it jammed between a bag and the carriage. I looked at it, but there was no skin broken. The other gentleman said he had received a blow on the back of his head. I inquired of the gentleman how he met with the accident, and he said it was done when shunting in the siding.

Thomas Kettlewell stated: I am a station inspector at North Road, and was on duty on the down platform on August the 2nd when the 11.15 a.m. train ex Penzance was backing into the loading bank siding to take up the Plymouth portion. I noticed porter Bagshaw waving the train back with a green flag held in his right hand. I saw a red flag in his left hand, but I did not see him show it to the driver. I saw the collision and noticed a gentleman's hat fall out of one of the windows, and porter Bagshaw picked it up and handed it to the passenger. I had an uninterrupted view of the train as it was backing into the siding for the two coaches. It was backing about the usual speed, perhaps a very little faster than I would walk. I have been nearly 38 years in the Company's service, and about 22 years station inspector. I do not think the speed of the train backing was checked before it struck the Plymouth coaches which were in the siding.

Gustavus Bell stated: I am station-master at North Road, and have been in that position six years. On August the 2nd, the 11.15 a.m. train ex Penzance was 14 minutes late, and the 2.8 p.m. train from Plymouth arrived first at 2.12 p.m.; it was put into the loading bank siding at the west cabin, as is usual when there are two coaches from Plymouth and that portion arrives first. The engine remained in the siding but disconnected from the coaches. The Penzance portion of the train arrived at 2.20 p.m., and guard Searle told me that the rear third-class coach was going through, but the composite next in front of it

was coming off for Plymouth. I went to the rear of the train and had these two coaches uncoupled, and instructed acting-foreman Bagshaw to place them on the middle line. The engine ran out of the loading bank siding and took away the two coaches and placed them on the middle line. I then gave the signal to the driver of the 11.15 a.m. and to acting-foreman Bagshaw that it was right for the train to back into the siding. I was standing on the platform at the time. The train then backed into the loading bank siding. I spoke to the driver of the pilot engine which was standing in the siding, and told him that he would have to assist the train, and he came out of the siding on to the main line. When the 11.15 a.m. train came out of the siding with the Plymouth coaches attached, the examiner told me that an axle-box of the third-class coach which came from Plymouth had been broken. I transferred the passengers and luggage out of the coach, and by this time the engine which had taken away the two rear coaches from the 11.15 a.m. had put the third-class coach behind the train, as that coach was going on. The engine then went back and fetched the composite coach which had been put on the up straight road and backed it to the tail of the train, in place of the one with the broken axle-box which was taken off. The coach which was disabled was shunted on to the down line at the east end of the yard. The train left at 2.50 p.m., having been here half an hour, or 18 minutes over time. I first knew that a collision had occurred by the examiner telling me that an axle-box had been broken, and almost at the same time a passenger, Mr. M. Stern, said I should have to buy him a new hat, as the one he had had been crushed. He did not complain of personal injury. Another gentleman gave me his commercial card; he appears to be a Mr. J. Faulkner Shepard, of 11, Marlborough Road, Stratford, London, E. He complained that the back of his head had been knocked by the shunting, and I asked him to show it to me. He turned round and put his hand to

the back of his head. I told him I could not see anything. He said he did not know there would be anything wrong, but he wished me to know it. A Mr. Joshua West, of 25, Sydney Buildings, Bath, gave me his card, and stated his hat had been crushed, and the Company would have to buy him a new one. He did not complain of personal injury. After the train had left policeman Mortimore said some one had complained about injury to his thumb, but he could not say who the passenger was. I selected Bagshaw to act as foreman in the absence of Dyer (who was on two days' leave), because he was the senior porter, and he had been shunting for years past when on night duty under the foreman. I considered he was fully competent. In fact he told me that he knew what to do. We always use flag signals in shunting the 11.15 a.m. train from Penzance, and the porter had a red and a green flag with him when he went to do the shunting.

John May stated: I am a signalman at North Road, and was on duty on August the 2nd in the signal-cabin exactly opposite where the accident occurred. I saw the Penzance portion of the train backed into the siding. When I thought the speed should have been checked it was travelling faster than I thought it should. I then looked at the driver to see if he was looking for his signals, and he was doing so. The Penzance portion of the train was about 5 or 6 yards from the Plymouth portion at this time. I could not do anything to warn the driver or stop the collision. At the time I was signalling another train on the main line. I think the Penzance portion struck the Plymouth coaches at a speed of about four miles per hour, certainly not more. I saw a hat tumble out of one of the windows of a Plymouth coach. I have been in the Company's service about 17 years, and 12 years a signalman. At the time I saw the shunter, who was flag signalling, he was showing a green flag to the driver. I did not see him exhibit a red flag at all. He had a red flag in his left hand at the time.

Conclusion.

The slight collision was caused by the carelessness of the porter, who on this date and the day previous was doing the duty of the regular shunter, who was absent on two days' leave. He was calling the train back by means of a green hand-flag in his right hand. He had a red hand-flag in his left hand, but he does not appear to have used this flag in sufficient time, and until the Penzance part of the train was within a few feet of the Plymouth coaches, so that no brake, except the hand-brake which was slightly applied by the fireman, was put on before the collision occurred. The Penzance coaches appear to have struck the Plymouth coaches at about walking speed. The fireman who was applying the screw-brake had been in the Company's service 16 years; seven years a fireman, but he had only been about six weeks appointed a passenger fireman. The engine-driver does not appear to have exercised as much care as he should have done in backing on to the Plymouth coaches. Owing to the curve at the junction of the siding into which he was backing, he could see the position of the two Plymouth coaches. They were in the siding when he ran past them into North Road station with the train from Penzance. The man who was doing shunter's duty, and who should have held out the red flag sooner, had been on duty about six hours, the driver and fireman about nine hours, when the collision occurred. Any one of these three men, if they had been vigilant, could have prevented the collision.

The Assistant Secretary, Railway Department,
Board of Trade.

I have, &c,
F. H. RICH,
Colonel, R.E.

Printed copies of the above report were sent to the Company on the 24th September.

GREAT WESTERN RAILWAY.

Board of Trade, (Railway Department,)
31st January 1890.

SIR,

In compliance with the instructions contained in your Minute of the 30th ultimo I have the honour to report, for the information of the Board of Trade, the result of my enquiry into the circumstances which attended the accident that occurred on the 12th ultimo, on the Wiveliscombe viaduct, which is situated between Saltash and St. Germans stations, on the Cornwall section of the Great Western Railway.

The mail train, which is due to leave London at 9 p.m., for Penzance ran off the rails while passing over the viaduct.

No persons were injured. The train on leaving Plymouth consisted of a tank-engine, which was running with its funnel in front, a Post Office sorting-van, a luggage-van with the guard in charge, a third-class, a composite, a sleeping carriage, and a parcel van, in which the second guard was travelling, at the tail of the train. It left Plymouth 31 minutes late, and when it was about two miles west of Saltash station the left leading wheel of the engine crossed the near-side rail, and the right leading wheel dropped inside the off-rail.

The right driving wheel also dropped inside the off-rail about 60 feet beyond the place where the leading wheel mounted. This was caused by the left-side driving wheel pushing the near-side rail outwards, spreading the rails, and breaking nearly all the transoms from thence to where the engine was brought to a stand, about 380 yards from the place where the leading wheel mounted and crossed the near-side rail. When the train was stopped all the coaches were off the rails. The off-side wheels were at the near side of the off-rail.

The left driving wheel of the engine and the life-guards were damaged, six rails were bent, 77 transoms, and 60 strap bolts of the permanent-way were broken.

Description.

The Great Western Railway approaches Wiveliscombe viaduct from Saltash on a falling gradient of 1 in 91, and on a curve bending northwards on a radius of 48 chains. This gradient changes to 1 in 304 about a quarter way over the viaduct, and continues for a distance of about 36 chains. The railway then rises 1 in 287 for a distance of 26 chains, after which the line is practically level for a short distance.

The viaduct is about two chains long, and the curve to the north alters to a reverse curve of about 72 chains radius at the west end of the viaduct. When I visited the place after the accident there was no super elevation of the outer rail for about the last 20 feet of the curve to the north, which extends across the viaduct. The engine wheel left no mark where it mounted, but I was informed that there had been a slight mark on the top of the rail, and the head of the bolt outside the near rail, which fastens the rail to the longitudinal sleeper, and which is a few feet from the western end of the viaduct, was indented by the flange of the left leading wheel having dropped on it, and about 50 feet further on the rails were spread and nearly all the transoms were broken.

The leading wheels of No. 3,502 tank-engine, which was drawing the train, are 3 feet 6 inches diameter, and are intended to carry 10 tons 14 cwt. The driving and trailing wheels are 5 feet diameter; these wheels are coupled together, and are intended to carry 16 tons 12 cwt. on each pair.

The distance between the centres of the leading and driving wheels is 9 feet 3 inches and between the driving and trailing wheels it is 7 feet 9 inches.

Evidence.

Richard Gilpin stated: I am a passenger engine-man, and have been in the Great Western Company's service about 29 years. I have been a driver for 19 years, and during the past nine years I have been a passenger driver working over the South Devon, Cornwall, and West Cornwall districts. I booked on duty on December 18th at 3.40 a.m. to work the 4.40 a.m. down mail ex Plymouth. I left Plymouth at 5.11 a.m. with the mail, starting 31 minutes late. The delay was caused by the London portion of the train being late into Plymouth. My train consisted of a tank-

engine, four wheels coupled—it was running with the funnel in front—one six-wheel, and five eight-wheel coaches. I stopped at Saltash two minutes, as per time allowed in the service book, and then proceeded. Just as the engine was leaving Wiveliscombe viaduct, which is about two miles from Saltash, and near the 254 mile-post, it felt as if the front part of the engine had struck something; at the same time it gave a lift and then plunged forward, and I heard a crash underneath the engine. This all transpired in a moment. I looked out over the right-hand side of the engine and saw

fire flying from the leading wheels. I immediately applied the vacuum and steam brakes, reversed the engine, and brought the train to a stop as quickly as possible. I looked at my watch and found it was then 5.28 a.m. I left Saltash at 5.23 a.m. I did not notice anything unusual when passing over Wiveliscombe viaduct, until we were off the line, and it seemed to me that we were just off the viaduct, when I felt something wrong. I got off the engine and found on examination that both its leading wheels, and its right-hand driving wheel were off the line, having dropped off to the left-hand side of rails. The left-hand driving wheel had the edge of its bearing on the metals. I also found some of the wheels of the van next the engine were off the line. By this time I was joined by the guards, and we then arranged as soon as possible to protect the train and send for assistance. I sent my mate, Edward Lillierap, ahead towards St. Germans with detonators and signals, and told him to protect the train in the usual way, and on reaching St. Germans to wire to Plymouth for assistance. In the meantime I examined my engine and found it was not badly off the rails, the leading wheels being about eight or nine inches at the near side of the irrespective metals. The left-hand driving wheel had its flange cut, which appeared to have been caused by its rubbing against the metals. I should say I was running at a speed of about 30 miles an hour, which is about the proper speed according to the timetable, when the engine made the lurch, and I must have run about 200 yards after this before the train stopped. I have no doubt I should have brought up quicker than this, but it was a dirty morning, the rails were very slippery, and the road is slightly down an incline. I examined the train and found that all the off side wheels of the coaches had dropped down at the left-hand side of the metals, owing to the road having opened. About half an hour after the accident I walked back with my hand-lamp and examined the viaduct to see if I could discover the cause of the accident. I could find no indication of anything that had been struck by my engine. The only damage my engine sustained was the flange of the left-hand driving wheel was cut. Both front life-guards were also slightly bent. The engine was put on the rails again at 9.0 a.m., and shortly after, under the direction of the locomotive foreman, I pulled the whole of the train steadily forward and drew the whole of the wheels of the coaches which were off, on to the metals. The engine and coaches were thoroughly examined, and the vacuum-brake was in good working order. I was sent on with the train to St. Germans, starting from the scene of the accident at 9.55 a.m., and arriving at St. Germans at 10.0 a.m. My engine was then unhooked from the train, which was taken on by engine 2,131 at 10.5 a.m. I remained at St. Germans for trains to pass, and supplied coal from my coal bunker to other engines that were working transfer trains. I returned to Plymouth in front of engine, No. 3,553, at 3.0 p.m. on the same day. I was on duty from 9 a.m. to 1 p.m. the day before the accident. I think the gradient down which I had been running just before the accident was from 1 in 100 to 1 in 200. There are no gradient boards. My fireman and self remained on the engine and were not hurt. I had a steam-brake and screw-brake on my engine, and the automatic vacuum-brake on the engine and on the whole of my train. The vacuum-brake could be applied by the guards as well as from the engine. I think that I ran 20 or 30 yards after hearing the crash before I put on the automatic vacuum-brake.

Edward Lillierap stated: I am a fireman, and have been in the Great Western Company's service about 13 years, nine years of which I have been engaged firing between Bristol and Penzance. I booked on duty on the 18th December at 3.15 a.m. to fire to engineman Richard Gilpin on engine 3,502. He was to work the 4.40 a.m. down mail train from Plymouth to Penzance. We left Plymouth with the

mail train at 5.11 a.m. and all proceeded well until we had gone about two miles from Saltash, when I felt the engine lurch, and at the same time heard a crash underneath the engine. The morning was very dark, and at the time I felt the engine lurch I was looking out ahead on my side. The front wheels of the engine seemed to drop. I think the lurch must have taken place on Wiveliscombe viaduct, as far as I could judge; but I did not see the viaduct in passing over it. It was dark at the time. After the crash before mentioned took place my mate applied the brakes, reversed the engine, and brought the train to a stand as soon as possible. I did not see any obstruction fly from the front of the engine. Shortly after we stopped my mate sent me to St. Germans with detonators, &c. to protect the line, and to send to Plymouth for assistance. On reaching St. Germans I wired to Plymouth for assistance, and then returned to the scene of accident by the 7.23 a.m. train ex Liskeard.

Guard *Daniel Plumridge* stated: I was head guard of the 9.0 p.m. mail train ex Paddington on the 17th December. When the train was running about two miles west of Saltash the leading wheel of the engine mounted the near-side rail and ran off, and the right side front driving wheel left the rails also. The engine ran on for about a quarter of a mile before the train came to a stand, and during the time the engine was running off the rails it spread out the line, so that the whole of the near wheels of the vehicles on the train dropped from the rail on to the longitudinal timbers. When the engine came to a stand the flanges of the driving wheels were only about inch from the rails, and the leading wheels about three or four inches. This happened at 5.30 a.m. I sent guard Bird immediately back to Saltash for assistance, and sent the fireman forward to St. Germans to give information there as to what had occurred. The accident gang arrived from Plymouth I should think about from 7.30 a.m. to 8.0 a.m., but I cannot fix the time nearer. The engine was lifted on to the line, and the carriages were pulled on, the flanges at one side not being off the metals, and we started again at 9.50 a.m. The line is broad gauge and the rails are on longitudinal timber. The train went at a reduced speed as far as St. Germans, where we stopped to change engines, and at Liskeard we had to wait while the new engine was turned. We arrived at Liskeard at 9.24 a.m., left at 9.30 a.m., and proceeded in the usual course from Liskeard to Penzance, arriving at Penzance at 12.52 p.m. instead of 7.35 a.m. I examined the spot where the engine mounted the rails, but I could not see anything to enable me to form any opinion as to the cause. My train consisted of a tank-engine, a six-wheel Post Office sorting-van, a luggage-van in which I was working, a third-class, a composite, a sleeping-carriage, and a parcel-van in which the second guard was travelling. All the carriages except the Post Office van were eight-wheel vehicles. I think the train was running at a speed of about 30 miles an hour when the accident happened. I was sitting at the right side of the luggage-van, and on feeling something wrong I walked across and let down the window. As I did so I think the brake was applied. I think my van was off the rails when I felt something wrong. I have been about 30 years in the Great Western Company's service, and about 25 years a guard. No passengers complained of being hurt.

Guard *Bird* stated: I was second guard of the 9.0 p.m. mail ex Paddington on December 17th. I have heard the statement made by head guard Plumridge, with which I agree. I was sent back to Saltash for the purpose of obtaining the necessary assistance, and on arriving there I saw the signalman, who took particulars from me and did what was necessary. He telegraphed to Plymouth. I then started back to protect the train in the usual course, and remained there until I was relieved by a

platelayer who had been sent for the purpose. I saw the ganger gauge the line, commencing some distance at the Saltash side of the spot where the engine mounted, and he said it was exactly right, but within a short distance on the St. Germans side, after passing that spot, it was considerably wide of the gauge. The road was supposed to have been spread by the engine getting off the rails. I am unable to give any opinion as to the cause of the engine mounting, and I cannot give any further information in connexion with the accident. I have been about 26 years in the Company's service; 18 years a guard. I was riding in the van at the rear of the train.

John Tiltman stated: I am the ganger in charge of the viaduct and of the district between Forder viaduct and St. Germans. I have five timber viaducts under my charge. I was working at Wiveliscombe viaduct the day before the accident. I had been working there since the 9th of last December changing planks in the floor of the viaduct under the ballast. On the 17th of December I changed three planks at a point about 54 feet from the west end of the viaduct, for which purpose I had opened up a length of about four feet of ballast. At 3.15 p.m. on December 17th I left the ballast packed under the timbers and boxed up on each side of the longitudinals, and to prevent slacks I also left two wedges at two places under the longitudinal timber. The wedges were about six inches wide. I took the wedges out after the accident, when the packing of the ballast was finished. When I left the line at 3.15 p.m. on December 17th to go to Saltash the road was right to gauge and in good order for traffic. I did not see the line again until after the accident to the down mail on the morning of

the 18th of December. The line over the viaduct was the same then as when I left it the previous day. I am unable to account for the accident. I have been a viaduct ganger 17 years, and 20 years in the Company's service. I had put in about 20 new flooring-planks when the accident happened. These planks are nine inches thick. About 17 trains had been over the viaduct between the time when the new planks were put in and the time the accident happened.

William Secombe stated: I am a ganger in the employment of the Great Western Railway Company, and my length extends from the 251 $\frac{1}{2}$ mile-post to the 254 $\frac{1}{2}$ mile-post. Wiveliscombe viaduct is in my length. I have three men in my gang; they did not work near the viaduct on the 17th of December. As I was returning to Saltash at about 4.30 p.m. on the 17th December I walked over this viaduct. The viaduct men had left work, but I knew they had been working there during the afternoon of that day, and I examined the road, and it appeared in good order for traffic, but I did not test the level of the rails. At about 6.50 a.m. on December 18th I learnt from the station-master at Saltash that an accident had happened to the down mail. I went at once to Wiveliscombe viaduct and found the train off the line. I examined the line over the viaduct and found it right. I saw a mark where a wheel had dropped outside the rail, but I could see no mark to show where it had mounted on the top of the rail. I gauged the line over the viaduct and found it right. I cannot account for the accident. I have been about 16 years in the Company's service and about 19 months ganger.

Conclusion.

This accident, which fortunately was not attended by any injuries to the passengers in the train or to the Company's servants who were in charge of it, was caused by there being no super-elevation on the outer rail of the first curve at the place where the near-side leading wheel of the engine mounted.

The train had been running at considerable speed, judging by the distance the engine travelled after the leading wheel left the rails, and by the place at which the driver stated that he applied the automatic brake.

The engine appears to have been in good order, but owing to the light weight on the leading wheels it would be liable to mount the rail when running at very high speed over a place where the rail was low. When weighed after the accident the weights on the near-side wheels were 3 tons 15 cwts. on the leading, 10 tons 2 cwts. on the driving, and 7 tons on the trailing. On the off side the leading wheels carried 5 tons, the driving 11 tons, and the trailing 7 tons.

The leading springs were removed for examination by my direction, and put back before these weights were taken, and the alteration from the proper weights on each wheel is attributed by the locomotive superintendent of the Great Western Railway to the shaking of the engine while running off, and when being put back on to the rails, and possibly to the buckles having been taken off the springs for me to examine the plates.

It appears that the ganger, who has charge of Wiveliscombe and four other timber viaducts, had been working at Wiveliscombe viaduct repairing the floor, on the day before the accident and for several previous days. The floor consists of timbers nine inches thick. These are covered with broken stone ballast, on which the longitudinal timbers that carry the rails rest. The railway is broad gauge. The viaduct ganger in replacing the railway, after repairing the floor, does not appear to have fixed the outer rail of the curve in a permanent manner with the proper super-elevation, and the ganger of the length, who walked the section on his way home from work, did not apply his level to the rails, and failed to detect the defect, if it then existed; but it is possible and probable that the rail sunk, between the time when the gangers left in the evening of the 17th and when the train ran off on the morning of the 18th instant, as the packing of the longitudinal was newly done, and 17 trains had passed over the viaduct during that time. I recommend that a short piece of straight line be

The line is worked upon the absolute block system; and under a special rule trains for the bay lines are required to be brought to a stand at the home-signal, and then to proceed at a speed not exceeding three miles an hour.

Evidence.

Edward Banks states: I have been between 14 and 15 years in the service of the Lancashire and Yorkshire Railway Company as signalman at Preston. On the 7th instant I came on duty at 6 a.m. for 10½ hours in the goods yard box. This box upon week-days is an eight hours box. At 2.25 p.m., the 1.30 p.m. train from Accrington to Preston, due at 2.22, arrived at the down main platform. The 1.10 p.m. down train from Liverpool to Preston, due at 2.33, was offered to me from Whitehouse junction at 2.29, and was accepted. It was given on line at 2.31, and is booked as arriving in the bay at 2.34. I kept my home-signal at danger, in accordance with the rule, until the train had come to a stand, or as nearly as possible to a stand. I had set the points for No. 1 bay as soon as the train was given on line. As soon as the train had come to a stand I lowered the home-signal (No. 3). Before doing this I have to lower either No. 35 or No. 34 for No. 1 or No. 2 bays. I had lowered No. 35 for the train to go into No. 1 bay. As soon as I lowered No. 3 signal the driver put on steam, and he passed my box at a speed of about 4 miles an hour. Steam was still on. I did not pay any more attention to the train after seeing that the tail lamp was on the last vehicle, as it was running at the usual speed. I did not think any more about the train until I heard the crash of the collision with the buffer-stop. This train usually runs into the same bay. Both the Accrington and the Liverpool trains have to transfer passengers for the Blackpool train, which runs in from Manchester on the far side of the station. As soon as the driver passed through the crossing at No. 11 facing-points he should have known that he was going into one or other of the bays, even if he had not the signals to guide him. If he had been going to the down main platform he would have got No. 2 home-signal, and then a signal covering the platform worked from No. 3 North Union box. There was no room at the down main line platform for both these trains. Sometimes two short trains are run to this platform. In this case I get "Line clear" from the North Union (No. 3) box, and this allows the train to run up to this home-signal. We do not work the "Section clear but station blocked" signal between my box and North Union box (No. 3).

James Partington states: I have been 25 or 26 years in the service, and a driver about 13 years. On the 7th July I came on duty at Bolton at 7 a.m., having gone off at 4.55 p.m. on the previous day. My engine, No. 643, is a tender-engine, with leading bogie, and driving and trailing wheels coupled. The tender has four wheels. I took the 7.52 train from Bolton to Liverpool, arriving at 9.19. I was then occupied in shunting until 11.45, and then turned and got ready for the 1.10 train from Liverpool to Preston, due at 2.33. My next duty after shunting would be to take the 4.55 train from Preston, due in Liverpool at 6.18, and then the 8.5 train, due in Bolton at 9.58. This was an exceptional, not a regular, day's work, and I would be off duty the next day. I left Liverpool at 1.10, the booked time, and stopped at all stations. I had eight vehicles in the train, which was fitted throughout with the automatic vacuum brake. I used the brake at all stations and it acted well. The last stop was Preston junction, about two miles out of Preston. From this station the line falls to the bridge over the river, and is then level and slightly rising into the station. I shut steam off at the distant-signal, which was at danger, and came steadily down to the home-signal, which was also at danger. I did not come quite to a stand, as

the home-signal was lowered a little before I got to it, when I was running at about four miles an hour. The middle signal-arm was lowered for me. I do not know the signals very well, and I thought that I would have to run to the platform on the main line. I was on the East Lancashire side of Preston station last Good Friday, and previous to that I had not been there for six or seven years. Before leaving Liverpool I told the guard that I was rather "strange into Preston," and asked him if there had been any change. He said "No, nothing particular," and I said, "Will you then keep a good look-out." My regular fireman was off duty, and I had a cleaner acting as fireman who had not been on that road before. I then looked ahead for the signal at the end of the platform and saw it was at danger, and then I found that I had been crossed on to the bay lines. I did not find out that I was going into the bay line until I came to the splitting points for the two bays. I thought that I was going to run to the centre of the platform as I did on Good Friday. After the home-signal was lowered for me I put on steam, and got up to a speed of between four and five miles an hour. After passing the cabin I shut off steam, and I had reduced to two or three miles an hour when I got to the splitting points. I did not know then that I was on a bay line with buffers, but thought I was going along to the middle of the up platform. The line is on a sharp curve to the right, and I was on the left side of the engine. I did not see the buffers until I was within about three yards of them. I had my brake slightly on at the time. I had applied it slowly after passing the cabin. I had been running with 19 or 20 inches of vacuum, and I reduced it to between 14 and 15 inches. As soon as I saw the buffers I applied the brake full power. I think I struck the buffers at a speed of two or three miles an hour. The shock knocked me over against the small ejector. The engine did not leave the rails. The buffer-beam was slightly damaged. I know that it is the duty of a driver to ask for a conductor if he does not know the road. I am not aware if there is a printed rule to that effect. I considered that I did know the road as far as Preston, although not the station itself. If I had not known the line to Preston I might have got a conductor at Lostock Hall, the last station but one. After passing Lostock I had no opportunity of getting a conductor. When I was some way along the platform my mate, whom I had told to look-out, told me that a porter was signalling us on. I went across the footplate and saw him, and thought that I was to go out on the main line, so I released my brake a little. I then saw that the points were not set for going out, and then I saw the buffers and applied the brake hard, but it was too late.

Albert Hutchinson states: I have been about three years 10 months in the service as cleaner, and I sometimes act as fireman. On the 7th instant I was acting as fireman to driver Partington. I have never been into Preston on the East Lancashire side, but have often been on the other side. I did not know when entering the station whether we were going up the main line or up a bay line. When about a carriage length and a half up the bay a porter on the platform kept calling us on, and my mate released his brake a little. I informed my mate that the porter kept calling us on. I saw the buffer-stops when about a carriage length and a half away from them, when we were running at between three and four miles an hour. I called out to my mate to stop, and he turned round and applied the brake full power.

Robert Screaton states: I have been 25 years in the service, and a guard for 16 years. On the 7th July I came on duty at 7.30 a.m. at Liverpool. My Sunday tour of duty lasts till 10.10 p.m., but I am booked off from 10.40 a.m. till 12.40, and from 2.33 till 8.45 p.m. I was guard of the 7.10 p.m. train from Liverpool to Preston. We started at 1.10 p.m. with train made up as follows:—Engine, tender, milk truck, brake-van, one composite, one first-class, and four third-class carriages. I was riding in the brake-van. The train was fitted throughout with the automatic vacuum brake. Before starting the driver said he had not been into Preston since Good Friday, and asked me to check him if he was going by the stations. I told him that I would. He did not ask me anything particular about Preston station. I did not know that he was uncertain of the road and signals at Preston. Coming into Preston we came nearly to a stand at the home-signal, reducing to a speed of between three and four miles an hour. The proper signal for our line was lowered, and we proceeded at the usual speed of about four miles an hour. I looked ahead and saw that the proper signal for No. 1 bay was lowered. I knew that as usual we would turn into this bay. After passing the cabin the driver applied a little steam and then shut off again. After

passing the splitting points I thought he was going a little too fast, so I applied the vacuum brake, reducing the vacuum from 17 lbs. to 13 lbs. When about 20 yards away from the buffers we were still not pulling up, so I put the vacuum in full power, but it struck the buffers at a walking speed. There were 30 or 40 passengers in the train. Only two complained of injury. I was badly shaken myself.

Matthew Robert Harwood states: I have been about 11 years in the service, all the time at Preston as porter. On the 7th July I was standing on the platform when the train from Liverpool, due at 2.33, arrived. I was standing near the points leading out on to the main line. I saw the train coming, and just before the engine reached the end of the platform I thought the driver was going to stop short of the points, as they often do, so I called him on. I remained near the points, and as the engine passed me I called out "steady," as I thought he was going too far up. He was going at about four miles an hour at the time. I did not think he would strike the buffers. There was, I think, room to stop after the points. I did not see the driver apply the brake after he passed me. None of the train left the rails.

Conclusion.

This slight collision was due to the fact that the driver was not only entirely ignorant of the signals and lines leading into Preston from the East Lancashire line, but was singularly unobservant. Had it been otherwise he must have found out that his train was going into one of the bays when he was turned through the facing-points on the down main line, 300 yards outside the down main line platform, and across the up main line. Having then so completely lost his way, it was not surprising that he did not see the buffer-stops until close upon them, for No. 1 bay line runs alongside the up platform, without any platform outside it, and it is upon a sharp curve to the right. The train was running at very moderate speed, and the driver had released his brake slightly upon being called forward by a porter, who thought that he was going to stop too soon, so that it might easily have been pulled up in time if the driver had known where he was.

It was the driver's duty to ask for a conductor at Lostock Hill station, as he was strange to the road, but I do not think it right that a driver in this position should be sent out with a cleaner to act as fireman who also was not familiar with the line.

The evidence discloses the fact that the working hours of the driver, who at the time of the accident had been on duty for about $7\frac{1}{2}$ hours, were upon this day a great deal too long. It is true that it was not a regular, but an exceptional, day's work; but no man can keep his attention up, so as to be an efficient driver, for a period of 15 hours.

There was a breach of the actual letter of the rule regarding trains entering the bays at Preston, for the signal was lowered for this train before it had actually come to a stand. This did not contribute to the accident, but the signalman should be warned that the rule must be literally obeyed, or else the rule should be modified.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

F. A. MARINDIN,
Major, R.E.

Printed copies of the above report were sent to the Company on the 14th August.

LANCASHIRE AND YORKSHIRE RAILWAY.

Board of Trade, (Railway Department,)
1, Whitehall, London, S.W.,

9th January 1890.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 9th ultimo, the result of my enquiry into the causes of a double collision which occurred on the 7th ultimo, at Cheetham Hill junction, near Victoria station, Manchester, on the Lancashire and Yorkshire Railway.

In this case, the 7.50 p.m. London and North-Western Company's coal train from Plodder Lane for Rochdale, via Cheetham Hill junction, which was being assisted up the bank by a Lancashire and Yorkshire Company's bank engine at the rear of the train, was, while standing at the junction signals on the down fast line, run into at the rear by the 10.45 p.m. Lancashire and Yorkshire Company's down passenger train from Victoria station for Ramsbottom. By the force of the collision the rear van of the coal train was thrown foul of the up fast line and run into by the 9.40 p.m. Lancashire and Yorkshire Company's up passenger train from Bacup for Victoria, where it was due at 10.48 p.m., the collision occurring at 10.49 p.m.

In the down passenger train two passengers had their ribs broken, and 60 others (principally in the Ramsbottom train) have complained of injury.

The fireman of the Ramsbottom train was killed on the spot, when, it is supposed, in the act of jumping off his engine. The driver and guard of this train were also injured.

The guard of the coal train was seriously injured; another company's servant in the same train, who was learning a guard's duties, and the fireman of the bank engine, were also injured.

The Ramsbottom train consisted of an eight-wheeled tank-engine, running chimney in front, and eight vehicles, including a brake-carriage in front and a brake-van behind, the whole train being fitted with the automatic vacuum-brake. The buffer-beam of the engine was forced under the tender of the bank-engine, and the five vehicles behind it were knocked off the rails, the second one being turned partly over on its left side.

The Bacup train consisted of an eight-wheeled bank engine, running chimney in front, and 10 vehicles, including a brake-van in front, and a brake-carriage in rear, the whole train being fitted with the automatic vacuum-brake. The engine and front brake-van left the rails with all their wheels.

In the coal train, which consisted of an engine and tender, 17 waggons, and a brake-van, the brake-van and waggon in front of it were knocked off the rails, the brake-van being badly damaged.

The bank engine was a tender engine running engine in front. The back of the tender was lifted off the rails by the engine of the Ramsbottom train.

A list of the principal damage is given in an Appendix.

Description.

From the East end of Victoria station Manchester to Cheetham Hill junction, a distance of about 66 chains, there are four lines of rails, the two northern lines being designated "fast lines," and the two southern, "slow lines." There are ascending gradients all the way from the station to the junction, viz. :—

7 chains	-	-	1 in 57
10 "	-	-	" 65
49 "	-	-	" 150

There is one intermediate block-signal cabin called "Footbridge" about half-way up the bank, placed on the south side of the lines. The down home-signals (four in number) on brackets—one for the fast, and one for the slow line, one from fast to slow, and one from slow to fast—worked from this cabin, are placed 135 yards to the west of it, and the down advanced signals (two in number on a bracket, one for the fast, and the other for the slow line) are 280 yards to the east of the cabin, or 415 yards from the down home-signals. These advanced signals, which are of the same height, are placed (for better sight) on the south side of the lines, but on account of a curve and high retaining wall, that for the down fast line is visible only 230 yards off.

The collision between the Ramsbottom train and the bank engine at the back of the coal train took place on the down fast line about 125 yards east or outside of the down advanced signals, and that between the Bacup train and the van of the coal train nearly at the same spot on the up fast line. The light at the back of the tender of the bank engine could be seen from the foot-plate of the approaching engine for about 125 yards.

Evidence.

1. *Alfred Clarke*, driver; 19 years in the London and North-Western Company's service, driver 12 years.—I was driver of the 7.50 p.m. coal train from Plodder Lane for Rochdale on the 7th December. On leaving Victoria station the train consisted of 17 vehicles and a brake-van. From Victoria the

train was assisted up the bank by the Lancashire and Yorkshire bank engine behind the van. We just came to a stand at the Footbridge home-signal. After being nearly stopped I found the advanced-signal off, and we proceeded to Cheetham Hill junction down home-signal on the fast line, where I stopped. I had stopped there four minutes when I got a shock on the engine through something that had occurred at the back of the train. My engine was knocked forward about ten yards by the blow. The fireman and I were not hurt, but we were knocked backwards into the tender. Just as we received the shock the tail of a passenger train was passing the junction on the up fast line, so that I had no opportunity of signalling to the driver of that train. There was no time to do anything to alarm the servants of the passenger train. I heard a slight noise soon after the passenger train had passed. After I had recovered myself I went back and found that damage had been done to the rear end of my train. The train remained all coupled together as far as the last waggon. This last waggon was damaged and off the road, and the brake-van was 10 or 50 yards away on the Manchester side of the tail of my train, fouling both the up fast and the down slow lines, and mixed up with the engine of the up passenger train. The bank engine was off the road about 10 yards from the last waggon of my train. The engine of the Ramsbottom train was embedded in the rear of the bank engine. I had no conversation with the driver of the Ramsbottom train. The night was fine, but there was a very slight fog, not sufficient to impede the view of the signals. I gave a double whistle just as I was coming to a stand at the Cheetham Hill junction home-signal, but after that I did not whistle before the collision took place. I knew that the signal being off for the incoming Bacup train detained me at the junction until it had passed. The collision occurred at 10.49 p.m. I was nearly an hour before the booked time, being allowed one hour and a quarter at Ordsall Lane, where, being Saturday night, there was no work to do. My engine sustained no damage.

2. *Frederic Clague*, fireman; four years in the London and North-Western service, extra fireman about 12 months.—I was Clarke's fireman on the evening of 7th December with the Plodder Lane coal train. After passing through Victoria we got a bank engine to assist us up the bank. We were brought to a dead stand at the home-signals at Footbridge cabin, and remained about one minute, and then we proceeded on the fast line to Cheetham Hill junction, where we were stopped at the home-signals. The driver whistled two for the right-hand road before he had stopped at these signals, but he did not whistle after he had stopped. After being stopped about four minutes we received a shock from behind which knocked me into the tender. When we got the shock the tail of a passenger train was passing on the up fast line. The night was clear and moonlight. My engine was knocked forward about six or seven yards by the collision, but there was no fracture between it and the next waggon to it. I was not hurt. Driver Clarke and I signed on duty at 5.0 p.m. to sign off about 6.0 a.m.

3. *William Raymond*, goods porter; eight months in the London and North-Western Company's service, in training as a goods guard for a fortnight before the collision.—I was learning my duties with guard "George Crane" on the 7th December, and I accompanied him with the 7.50 p.m. coal train from Plodder Lane for Rochdale. I was with him in the rear brake-van of the train, and it was after passing through Victoria station while the train was still moving forward that the bank engine came up behind to help us up the bank. It was not coupled up to the van. I do not remember the train stopping between Victoria station and where the collision occurred. We had been standing about three or four minutes

when the collision occurred while both Crane and I were in the inside of the van. We were taken quite unawares. I do not know what occurred after the collision took place until I came to my senses on the ground, having been taken away from the van. I was a good deal injured and bruised. The night was fine and moonlight.

4. *Robert Taylor*, driver; 38 years in the service, 20 years driver.—I signed on duty at 12.20 p.m. on the 7th December. I was driver of the 9.40 p.m. passenger train from Bacup for Manchester, where I was due at 10.48. I had last stopped at Crumpsall, and left at 10.42, when the train consisted of a tank-engine, running chimney first, and 10 vehicles: the whole train being fitted with the automatic vacuum-brake applying to six coupled wheels of the engine, the trailing wheels being radial. There was a brake-van next the engine and a brake-carriage in rear. On approaching Cheetham Hill junction I found the distant-signal off, and could not at first see the home-signal for a bit of mist. I had had steam shut off for about a mile, and I checked the train with the brake until I could see the home-signal, and when I saw it it was off for the up fast line, and I passed the junction at a speed of about 20 miles an hour. Before I got to the junction I had not seen an engine of a coal train standing at the junction on the down fast line. I knew nothing of any collision in connection with a coal train until I ran into the van. I had not seen any lights nor heard any whistle to give me any indication that anything was wrong. I was running I think at a speed of 20 miles an hour when I struck the van. As soon as I felt that I had struck something I put the vacuum brake on hard. The engine ran from 50 to 55 yards after striking the van, and when it stopped it was off the road with all its wheels towards the right. My train remained all coupled together, the first van being off the road, but the rest of the vehicles on the road. Neither I nor the fireman was hurt so as to have to leave our work. I saw the driver of the Ramsbottom train seven or eight minutes after the collision, and he asked me about his fireman, who was missing; but no conversation passed between us as to the cause of the collision between his engine and the coal train. It was a fine moonlight night. The tickets had been collected at Crumpsall. I think the brake was useful in preventing the carriages of my train from telescoping. I had about 22 inches of vacuum at the time of the collision.

5. *Paul Pearce*, fireman; 7½ years in the service, fireman about six months.—I am Taylor's regular fireman, and was with him on the 7th December with the 9.40 p.m. passenger train from Bacup for Victoria. I signed on duty at 11.30 a.m. to finish work about 12 midnight. We had last stopped at Crumpsall. On approaching Cheetham Hill junction the signals were all off. I think we passed the junction at a speed of about 25 miles an hour. I did not see the coal train standing on the down line at the junction. The collision took me entirely unawares. I saw nothing of the van fouling the up fast line until my engine struck it. I had just seen the Footbridge signal off, and I had no sooner said it was so than the collision occurred. My mate had his hand on the vacuum brake-handle and applied it at once. I had my hand on the brake-handle at the time, and just gave it a turn. I stuck fast to the engine and was not hurt. We swept the van in front of us, and stopped in about 50 yards. The engine rolled over to the right, and struck some of the carriages of the other train, which prevented it turning right over, and it enabled it to right itself. The night was slightly misty, it was moonlight. I saw nothing of anything having fouled the line on which I was travelling.

6. *John Oakes*, guard; 30 years in the service, 18 years guard.—I was guard on the 9.40 p.m. passenger train from Bacup for Victoria on the 7th December. The train consisted of 10 vehicles, the first vehicle

being a brake-van, and the last vehicle a brake-carriage in which I was riding, and I could, if necessary, apply the continuous brake from the compartment of this brake-carriage. We were keeping time and had last stopped, before the collision, at Crumpsall, which station I left at 10.44, one minute late, this minute having been lost in collecting tickets. From Crumpsall I do not think there were more than 50 or 60 passengers in the train. I felt no slackening of the train as we approached and passed Cheetham Hill junction, where the speed was from 15 to 20 miles an hour, about our usual speed in going down the bank. I saw nothing of the coal train standing at the junction as we passed, though I was looking out of the van side-light on the right side. The collision took me entirely unawares. I was not knocked down nor hurt. The train did not stop very quickly, although more quickly than if pulled up by the brake alone. I did not hear or see anything to indicate that the brake had been put on. The only vehicle off the rails was the front van, and I only heard one passenger complain of injury in my train. The collision occurred as near 10.48 as possible. The night was fine and moonlight. There was no rebound of the train after we stopped, which leads me to conclude that the brake must have been put on.

7. *Joe Cooper*, driver; 20 years in the service, 14 years a driver.—I came on duty on the 7th December at 12.30 p.m. to sign off about 12.30 a.m. I was in charge of engine No. 625, an eight-wheeled engine with four-coupled wheels, and a four-wheeled trailing bogie, and at 10.45 p.m. I was attached to the passenger train from Victoria for Ramsbottom. It consisted of eight vehicles, including a brake-carriage next the engine, and a brake-van at the rear. The train was fitted throughout with the automatic vacuum-brake applying to the four-coupled wheels of the engine, and to four wheels of each of the vehicles. We started about right time from No. 7 platform. On approaching Footbridge signal-cabin I found the distant-signal for the down fast line at danger, but the home-signal was off when I first came in sight of it. The signal I allude to is the left-hand one of the four home-signals. The extreme right signal of these four was also off for the down slow line. I then passed the signal-cabin, and received no signal from the signalman as I passed it. I then came in sight of the advanced-signals of the Footbridge cabin. There are two advanced-signals, one for the fast and one for the slow line, and both of these signals were off when I first saw them coming round by the wall. I saw both these signals at about the same time, having walked across from the left-hand to the right-hand side of the foot-plate to look for them, and, I have no doubt whatever in my mind that both those signals were off. The distant-signal for Cheetham Hill junction, which is below the home-signal of the Footbridge cabin, was at danger when I passed it. On finding the advanced-signal of the Footbridge cabin off, I went on expecting I might be stopped at Cheetham Hill junction, but not expecting to find anything between the advanced-signal and the junction. Just as I was passing under the bridge beyond the advanced-signal I saw some steam, and at the same time the junction-signal at danger. I then thought something was wrong, and shut off steam, and put on the vacuum-brake with full force, the vacuum-gauge showing at the time 20 inches, my speed at the time not being more than from 12 to 14 miles an hour. I had given one whistle out of four for the junction, when I caught sight of the steam from the engine, and did not in consequence give the remaining three junction whistles. I had not time to whistle for the brakes. I do not think my speed had been reduced before I struck the engine at the back of the coal train, on the back of which engine I saw no light, though there might have been one without my seeing it. I am sure I got my brake on before striking the bank engine. I remained on the engine, and was hurt on my hip, and have been on the sick-list ever since. My fireman,

"Abraham Riley," who had been with me for six weeks, was missing from the foot-plate when I looked round directly after the collision. His place was on the right-hand side, and whether he jumped off the foot-plate or was knocked off I cannot say. After the collision I saw him picked up from underneath the London and North-Western brake-van, he having been swept forward with it in front of the Bacup train. He was quite dead. The night was very fine and moonlight. The collision occurred about 10.48 p.m. I saw nothing of the Bacup train coming. There was no appreciable time between the first and second collisions. My engine did not leave the rails, but the buffer-plank was forced underneath the tender of the bank engine. The brake-carriage next the engine and the one behind it were both off the rails; these were all I saw off the rails. The train for which I had seen the signal off on the down slow line did not pass before the collision. There was no steam coming from my engine except the exhaust steam as I was approaching the Footbridge signals; I did not cross the foot-plate on passing the Footbridge cabin, though I looked towards it. Had the signalman shown any signal I should have seen it. I usually give the whistles for the junction where I had commenced to do so on the present occasion, and I had not whistled for the junction or slackened speed further back.

8. *Thomas Lord*, guard; 15 years in the service, 11 years guard.—I was guard of the 10.45 p.m. passenger train from Victoria for Ramsbottom on the 7th December. It consisted of eight vehicles, the first being a brake-carriage, and the last a brake-van. I was in the rear van, from which van I could, if necessary, apply the continuous-brake. I cannot say whether the vehicles composing the train had four or six wheels. The vacuum-gauge showed 20 inches on starting from the station. On approaching the Footbridge signal cabin I saw the distant-signal for the fast line at danger, and the home-signal, namely, the left-hand one of the four, off, the other three home-signals being at danger. I first saw the home-signal off on passing the Victoria advanced-signal, and I kept sight of it till within 100 yards of it, during which time it remained off, and after this I did not look further at it. The next signals we came to were the advanced-signals of the Footbridge cabin, but as to the position of these signals I cannot speak, as, though I was looking for them, the steam and smoke, either from my engine or from the bank engine behind the coal train, obscured the view of these signals, and I never saw them. The collision took me quite unawares. I had not seen anything of the light at the back of the bank engine, though I was looking for the home-signal at Cheetham Hill junction; but I did not see it before the collision. I think the speed, just before the collision, was from 16 to 20 miles an hour. I felt the train checked slightly before the collision occurred, and I heard the noise of the air from the application of the brake, and I saw the gauge fall to nothing from 20. I was knocked down by the collision to the bottom of the van. I was badly shaken and had to go on the sick list for a week. The first vehicle on my train was off the rails, the second one was thrown on its left side; the three next were off the rails, and the three last were on the rails. Nothing passed between driver Cooper and me as to why he had run into the bank engine. The night was moonlight with a slight mist at places. I did not hear driver Cooper give any whistle before the collision. There were not many passengers in the first two carriages. As we passed the Footbridge cabin I looked towards it, but saw no light or signal given from it. I should have seen a light or signal had any been given. I felt no check at all to the speed of the train after leaving Victoria until just before the collision. There was steam hanging about the line as I passed the Footbridge cabin; it might have prevented my seeing a signal given from it.

9. *John Heapy*, driver; 19 years in the service, eight years a driver.—On the 7th December I was driver of the 10.45 p.m. passenger train from Victoria for Bury viâ Heywood. We left the station at 10.47, and we ran towards Cheetham Hill junction on the down slow line. On approaching the Footbridge cabin I found the home-signal, that is the right-hand one of the four, off. This was the only one of the four that I saw off. The next signal was Footbridge advanced-signal, but I did not come in sight of this, as before reaching the home-signal it was put to danger, and in consequence I stopped my train at the home-signal. I did not at this time know why the signal had been reversed, but was informed afterwards by my fireman, whom I sent to the signal cabin, that there had been a collision. I had not seen the home-signal for the slow line myself, but my fireman saw it off and then put to danger; and I attended to what he said. I had got about 100 yards in advance of the Victoria starting-signal, when the fireman said the Footbridge home-signal was put to danger.

10. *John Thompson*, fireman; eight years in the service, three years a fireman.—I have been about a month working with driver "Heapy," and I was with him on the 7th December. I was fireman of the 10.45 p.m. passenger train from Victoria for Bury. My place was on the right-hand side of the engine. We left Victoria two minutes late. On catching sight of the Footbridge cabin home-signals, just before reaching the Victoria advanced-signal, I saw the down slow line signal off, and I also saw at the same time that the left-hand signal of the four signals, namely that for the down fast line, was off. On approaching these signals I first saw that for the down fast line put to danger, and then the signal for the down slow line was thrown on, at which time we were about passing the Victoria advanced-signals. On seeing this I told my mate, and we pulled up at the home-signals, I think there may have been a minute between the two signals being thrown to danger. I never caught sight of the down advanced-signals from Footbridge cabin.

11. *James Mather*, signalman; 17 years in the service, 15 years a signalman.—I have been employed about five years in Cheetham Hill junction cabin, and I came on duty there on the 7th December at 10.0 p.m. to remain until 6.0 a.m. on the 8th. I have a train booker with me in the cabin. I received the "Be ready" signal for the London and North-Western coal train at 10.43, and accepted the signal, and gave "Line clear" at 10.43, and it was put "On line" at the same time. At 10.45 I received the "Be ready" for the 10.45 p.m. passenger train from Victoria for Ramsbottom, at which time the needle of the down fast line instrument was at "Train on line" as the coal train was standing at the junction. I did not accept the signal, and it was not given again. At 10.39 p.m. I received the "Be ready" signal for the Bacup train from Crumpsall. I accepted it and gave "Line clear" at the same time, and it was given "On line" at 10.46. I passed the signal on to Footbridge, and on the signal being accepted, and "Line clear" given, I took off both home and distant signals for the Bacup train, and the train passed the junction at 10.49. I cannot speak as to the speed of the train: I do not think it was quite so fast as usual, though why I cannot say. When the middle part of the Bacup train was about passing the cabin I saw the levers being shaken in the cabin, through some cause which I could not at the time account for. I did not hear the collision occur between the Bacup train and the van of the coal train. The first I knew of there having been a collision was by telephone from the Footbridge cabin just after I had perceived the shaking of the levers. The message said that the signalman thought the Ramsbottom train had passed his signals. I was quite aware that the coal train was standing at this time under my signals. I did not observe that the engine of the coal train was knocked forward towards my cabin when I observed

the vibration of the levers. The night was fine and moonlight. A few seconds after receiving the message from Footbridge cabin I replied that if the Ramsbottom train had passed the signal it would have run into the coal train and the Bacup train would have run into the obstruction.

12. *Charles Abbott*, signalman; four years' service, 14 years a signalman.—I have been six years in the Footbridge cabin, where I came on duty at 10.0 p.m. on the 7th December to remain until 6.0 a.m. on the 8th. A train-booker was with me in the cabin. His name is "Hugh Hughes." I received the "Be ready" signal from Victoria for a coal train on the down slow line at 10.34, and at the same time I accepted the signal and received the train and put the needle to "Train on line." I then got the signal—two, pause, two—for the bank engine to follow the coal train, and I answered with one beat. The train passed the cabin about 10.43, and I crossed it over on to the down fast line, having warned it forward to Cheetham Hill junction at 10.41, and the pilot engine passed behind it close up to it. At 10.45 I received the "Be ready" for the Ramsbottom train from Victoria East. At this time the fast line between me and Cheetham Hill junction was still occupied by the coal train. I offered the "Be ready" for the Ramsbottom train to Cheetham Hill junction, but Cheetham Hill junction did not accept it. I accepted the "Be ready" from Victoria East and took "Train on line" at 10.45. I kept my signals for the down fast line at danger, namely, the distant home and advanced. I received the "Be ready" signal for the Bury train (viâ Heywood) on the down slow line at 10.47, and I accepted the signal and took it "On line" at the same time. I warned it forward to Cheetham Hill junction, and on Cheetham Hill junction accepting the "Be ready" at 10.47, I lowered the home and advanced signals for the down slow line (but not the distant-signal) about half a minute afterwards, when Cheetham Hill junction lowered his distant-signal. About 10.48 I heard the engine of the Ramsbottom train whistle four for Cheetham Hill junction, the engine being at this time, I presumed, near the Footbridge home-signals. Upon hearing these whistles I lowered the home-signal for the down fast line, but still keeping the advanced-signal for the down fast line at danger; the advanced-signal for the down slow line being off at the time. Just as I lowered the down fast line home-signal I put a green light outside the west window of the cabin to caution the driver of the Ramsbottom train that the advanced-signal was at danger against him. The rule is to give a green signal for drawing up or slackening a train at the home-signal. The engine of the Ramsbottom train then passed the cabin at a moderate speed, I not having any idea that the train was going to pass the advanced-signal, but as steam was coming from the front of the engine, and I thought the driver might not have seen the first green hand-signal I gave a second light from the east window and shouted as the engine passed; and just after this the driver whistled again, four, for the junction. The speed did not at first appear to be increased, but on turning the bend it appeared as if the train was not going to stop at the advanced-signal. I watched the train and was not sure whether or not it would stop at the advanced-signal, but I told the train-booker to call up "Jimmy," that is the Cheetham Hill junction signalman, on the telephone, and tell him that I believed the Ramsbottom train was going to pass my advanced-signal. Cheetham Hill junction made some reply to the lad, but at the time I did not know what. I then lost sight of the Ramsbottom train and knew that it must have passed the advanced-signal, but I did not hear it collide with the bank engine. About 10.50 Cheetham Hill junction rung me up a second time on the telephone saying,—"I believe Bacup train has stopped and has run into them. Stop Bury train." On receipt of this message I at once threw up all signals against the Bury train, which at this time was somewhere near the up advanced-signal. The Bury train

responded by three sharp whistles given twice over, and stopped at the home-signals. The night was very fine and moonlight. The collision must have occurred between 10.49 and 10.49½. Having had the Bacup train warned on to me at 10.47, and having accepted it at 10.47, I knew that the coal train must be kept at the junction until the Bacup train had passed. When I took off the down advanced-signal for the slow line, I saw that it was off, and showed a good white light, and I saw at the same time the down advanced-signal, for the fast line was showing a red light. My practice is to draw trains nearly to a stand when proceeding on the down lines before lowering the home-signals, to allow the train to draw forward to the starting-signal, but on the up lines I bring the trains to a dead stand because of the falling gradient. I had omitted to notice that No. 47 block signal rule states that a train must be brought to a stand before the home-signal is lowered, to allow it to draw forward to the starting-signal. Rule No. 154A in the rule book stating that a train must be brought quite or nearly to a stand before lowering the home-signal.

13. *Hugh Hughes*, trainbooker; 18 years old, three years' service, all the time a trainbooker.—I have been all my time employed in the Footbridge cabin, where I came on duty at 1.0 p.m. on the 7th December to remain until 11.30 p.m. My duties are to attend to the telephone and to book the trains, and at the time of the collision there was no one in the cabin but Abbott and myself. The London and North-Western coal train was taken on line from Victoria East at 10.34, and the pilot in rear at the same time. At 10.43 the "Be ready" for this train was accepted from Cheetham Hill junction, not at 10.41, and the pilot in rear at the same time. I cannot account for the difference in time of two minutes as regards the "Be ready" being accepted for this train between Cheetham Hill junction and me. The Ramsbottom train was accepted, and "Train on line" given at 10.45, and it arrived at 10.48, and this train was never accepted from Cheetham Hill junction. The entry of 10.48 for this train was made by "Abbott" as I was attending to the telephone at the time, and the remark, "Ran past advanced signal" was also made by "Abbott" for the same reason. For the Bacup train "Be ready" was accepted at 10.47, and "Train on line" at 10.51. I may have made a mistake in the entry of "Train on line" at 10.51, being excited by the telephone message I had received about 10.48. "Abbott" told me to tell Cheetham Hill junction that

he thought the Ramsbottom train was running past the signal. I sent that message. He replied, and said that if it had it would run into the coal train, and that he thought the Bacup train off the branch would go into him. On receiving this message I could not understand it, and I called "Abbott," who had another conversation with Cheetham Hill junction, which I did not hear. I noticed "Abbott" taking off the home-signal for the Ramsbottom train after the driver had whistled four for the junction. "Abbott" also gave a green light from the Manchester side of the cabin, and then another one from the Cheetham Hill side, and he shouted to the driver, "Look out!" On "Abbott" offering the "Be ready" for the Ramsbottom train to Cheetham Hill junction I noticed the advanced signals, they were then both showing red lights. On pulling off the signals for the Bury train, I saw that the advanced-signal for the slow line was lowered, but not that for the fast line. I enter the figures in the book from what I hear on the bells, and not from what "Abbott" tells me. I heard the driver of the Ramsbottom train whistle a second time, four times, for the junction after he had passed the cabin.

14. *Joseph Challinor*, fireman; six years' service, fireman seven weeks.—I was working with Victoria No. 1 pilot engine on the 7th December. We were instructed to assist a London and North-Western coal train up the bank, and we caught the train up at the junction between the fast and slow lines near the Footbridge. On passing from the slow to the fast line I noticed the starting-signal from Footbridge cabin was a very poor light. I remarked to my mate that it was a poor light. I changed my tail lamp before leaving Victoria, and saw it was a good light. It was placed on the buffer-beam on the left-hand side of the tender. We had stood at Cheetham Hill junction about five minutes when we were run into by the Victoria to Ramsbottom passenger train. The passenger train was a few yards from us when I noticed it approaching, and the driver was then shutting off steam. I called out to my mate, and was then thrown into the ditch. I did not hear the driver of the Ramsbottom train whistle before the collision. I was knocked unconscious for a short time, and I was bruised about the body. The driver of the Ramsbottom train shut off steam just as he struck us. I noticed that the side-lights on the London and North-Western brake-van of the coal train were the usual side-lights, which were burning brightly. I have been working constantly with the pilot engine for some time, and have never noticed the advanced starting-signal light so bad as on the night in question.

Conclusion.

These very serious collisions must be principally attributed to Cooper, the driver of the Ramsbottom train, having failed to notice that the down advanced signal for the fast line at Footbridge cabin was (as there is good reason to believe) at danger as he approached and passed it. This signal is one of two (the other being the down advanced signal for the slow line) placed on a bracket on the up side (with a view to better sight) of the four main lines, and is first visible from the foot-plate of an approaching engine at a distance of only about 230 yards, a curve and high retaining wall preventing its being seen further off. The bank engine at the back of the coal train was standing only about 125 yards beyond this down advanced-signal, and could not be seen beyond that distance from the foot-plate of the engine of the Ramsbottom train. Cooper (who maintains that both down advanced-signals were off as he approached them) soon after passing them caught sight of some steam in front of him, and thinking something was wrong, shut off steam and applied the vacuum-brake with full force just before coming into collision with the bank engine, his speed being from 12 to 14 miles an hour. Cooper did not see any light at the back of the bank engine, though he acknowledges there might have been one without his having observed it. Cooper states that he had given one whistle out of the four junction whistles when he caught sight of the steam from the bank engine and did not give the other three. Directly after the collision he missed his fireman, and thinks he must

have jumped off and been caught by the brake-van of the coal train as it was being thrown across the up fast line, as he was afterwards picked up among the debris of this van, which was run into by the engine of the Bacup train.

Cooper is a driver of 14 years' service as such; he had been on duty about 10½ hours when the collision occurred, and would have completed his day's work of 12 hours in another 1½ hours. He was no doubt misled in approaching the Footbridge cabin down advanced-signals by not having been, as he ought to have been, stopped, or nearly stopped, at the down home-signals, and then allowed to draw on to the advanced-signals, a caution signal being shown from the signal cabin as he passed it. Finding the home-signal showing clear when he first came in sight of it, made him, no doubt, conclude that the down advanced-signal would also be right, and prevented his paying that attention to the signalman, as he passed his cabin, and to the advanced-signal, which he ought to have done.

The guard of the Ramsbottom train never saw the down advanced-signal at all, owing, he says, to steam and smoke interfering with his view of it. He corroborates Cooper's evidence with regard to the Footbridge cabin home-signal being clear when he first saw it about 330 yards off.

The fireman of a passenger train on the down slow line also saw the home-signal for the down fast line showing clear when about 330 yards from it, and soon after put to danger.

Abbott, the signalman in the Footbridge cabin, had come on duty at 10 p.m., about three-quarters of an hour before the collisions, to remain till 6 a.m. He is an experienced man of 14 years' service as signalman, of which he has passed six years in the Footbridge cabin. He states that on hearing the four junction whistles from the Ramsbottom train, which he presumed was then near the down home-signals, he lowered the home-signal for the fast line, but still kept the down advanced-signal for this line at danger to cover the coal train, which he knew was standing a short distance beyond it; that he also put a green light outside the west window of the cabin to caution the driver that the advanced-signal was at danger; that the train passed at moderate speed, but as he saw steam coming from the engine, and thought the driver might not have seen the green light shown from the west window, he gave a second green light from the east window and shouted; that soon after this the driver again gave the four junction whistles (this and the previous statement about the whistles is entirely opposed to Cooper's evidence, who declares he had not whistled for the junction until after he had passed the cabin, and then gave only one of the four whistles); that he then watched the train, not being quite sure whether it would stop at the advanced-signal, but suspecting it would not, he sent a telephone message to the Cheetham Hill junction to that effect; that he then lost sight of the train and knew it must have passed the advanced-signal, but was not aware that there had been a collision till informed to that effect by telephone from the junction, telling him to stop a passenger train for Bury, which was approaching on the down slow line, and that he accordingly did so.

A train-booker in the Footbridge cabin more or less corroborates Abbott's evidence; there appears to have been no mistake made as regards block-signalling between Abbott and the Cheetham Hill junction signalman.

The only blame attaching to Abbott is for not having stopped, or nearly stopped, the Ramsbottom train at the down home-signal before allowing it to proceed forward to the advanced-signal. There are two rules bearing upon this, viz., (1) No. 47 block-signal rule, which states that a train must be brought to a stand before the home-signal is lowered to allow it to draw forward to the starting-signal; and (2) Rule No. 154a of the rule book, in which the words "quite or nearly" are introduced before "to a stand." On the present occasion Abbott obeyed neither one nor the other of these rules, and is to be blamed accordingly.

The two rules should certainly be made identical, No. 47 block-signal rule being the proper one, the other having too much uncertainty about it.

For the second collision between the Bacup train and the brake-van of the coal train, no one appears to be to blame. The first collision occurred just as the middle of the Bacup train was passing the Cheetham Hill junction cabin, the engine being at that time about 200 yards from the spot at which the van had been thrown foul of the up fast line. The driver saw nothing at all of the obstruction, or that anything was amiss with the coal train until his engine came into collision with its brake-van, and carried

it forward from 50 to 55 yards; he thinks the speed was about 20 miles an hour on collision, when he at once put on the vacuum-brake.

The engine and front van of the Bacup train were thrown off the rails with all their wheels.

The Assistant Secretary,
Railway Department, Board of Trade.

I have, &c.,
C. S. HUTCHINSON,
Major-General, R.E.

APPENDIX.

DAMAGE TO ENGINES.

Bank Engine, 423.—Engine buffer-plank broken; angle-iron, leading end of framing broken. Tender framing broken, and tank knocked in. Back horn plate tender sheared off; framing of engine opened out.

Engine, 625, of Bacup train.—Right-hand side bottom of tank and step cut away. Pull plate broken; smoke-box front broken; sand-box broken. All vacuum pipes in front broken off.

Engine, 673, of Ramsbottom train.—Bunker end bulged. Right-hand side tank bulged; smoke-box front knocked in and broken. Angle-iron leading end of framing broken and right-hand sand-box broken.

DAMAGE TO VEHICLES.

No. 158, first-class.—Buffers badly bent, 15s.

No. 1684, third-class.—Headstock damaged and buffers bent, 15s.

No. 941, third-class.—Buffers badly bent, 5s.

Printed copies of the above report were sent to the Lancashire and Yorkshire and London and North-Western Railway Companies on the 5th February.

No. 307, first-class.—Completely demolished, with the exception of two pairs of wheels, 500l.

No. 906, third-class.—One end compartment demolished, two doors, bottom sides, end bar, headstock, three axle-boxes, three bearing-springs, two sole-bars damaged; two buffers broken, two badly bent, two buffer castings, step boards, step irons, quarter lights broken, and brake work and gas fittings damaged, 60l.

No. 1440, third-class.—Headstock broken, two axle-boxes broken, footboard broken, four buffers bent, and castings broken, 15l.

No. 317, second-class.—Guard's compartment and one passenger compartment demolished, and one damaged inside, two bottom sides, sole-bars, headstocks, and end bars damaged, four bearing-springs, four axle-boxes broken; all brake work, stay rods, gas fittings, extensively damaged, buffer castings and rods broken, and roof damaged, 200l.

No. 382, second-class.—Middle bar broken and buffers bent, 2l. 10s.

No. 55, van.—Headstock damaged, buffer casting broken, buffers bent, 3l.

LISTOWELL AND BALLYBUNION RAILWAY.

Board of Trade, (Railway Department.)
1, Whitehall, London, S.W.,
7th December 1889.

Sir,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 5th October, the result of my enquiry into the circumstances attending the accident which occurred on the 29th September, near Galey bridge, about two miles from Listowell, on the Listowell and Ballybunion Railway.

In this case, as the 6.30 p.m. passenger train from Ballybunion for Listowell was approaching Galey bridge, the whole of the train (which consisted of engine and tender and seven vehicles), with the exception of the engine, tender, and last vehicle, left the line; the engine and tender broke away from the first vehicle, and stopped in a few yards by the automatic application of the Westinghouse brake, with which the engine, tender, and three vehicles were fitted. There was an interval of about four yards between the tender and the first of the seven vehicles, which all remained coupled together, but all except the last one more or less tilted over to the left.

The train was full of passengers, but none, it is stated, have complained of being injured.

The damage to the train consisted in two bogie pivots of the vehicle next the engine, and in two side wheels of two other carriages, being broken.

In the permanent-way about 30 trestles were displaced, and 20 of these had their left legs bent inwards.

Description.

The Listowell and Ballybunion Railway is a single line about nine miles long, opened for traffic in 1888, and is constructed on the Tartigue or one-rail system. The rails,

which are of steel, double headed, weighing 25 lbs. to the yard, 33 feet long, fished at the joints, are supported on steel trestles 39 inches apart and 39 inches high throughout the line, except in the approaches to the Galey bridge, where they are five feet high. The rail is attached to the head of each trestle by a bolt and nut, the bolt passing through eyes in the top of each leg of the trestle and through a hole in the web of the rail. The legs of the trestles are riveted at the bottom to steel sleepers, these again being laid upon and fastened to timber sleepers. The legs of each high trestle are connected together by a tie 27 inches from the top, and cross-braces between adjoining trestles are introduced at short intervals. Horizontal guide-rails are fastened to the legs of the trestles, and along these run guide-wheels attached to the sides of the vehicles. Galey bridge is approached from Ballybunion on a straight line to within about 50 yards of it; there is then a curve to the left of six chains radius and about 16 yards long, succeeded by a similar one to the right of about the same length, whence across the bridge the line is again straight. The line falls towards the bridge on a gradient of 1 in 51, which terminates about the commencement of the left-handed curve; thence across the bridge the line is level.

The trestles began to be displaced about 40 yards on the Ballybunion side of the bridge, the whole 30 having their heads all leaning towards Listowell; in the case of the first four or five of these trestles, the heads still remained bolted to the rails; after this their displacement increased until, at about 17 yards from the commencement of the displacement, five or six of the trestles were all swept together in a group, gradually after this assuming their proper position. The rails were not broken, but pulled straight in plan, with a droop in elevation. Many of the bolts which had secured the heads of the trestles to the rail could not be found at the time, but afterwards these were picked up in spots adjacent to the line, and these three, although showing signs of having been recently in their place, were not at all bent or damaged, as they would have been if torn out of their seats.

It will have been observed that the accident appears to have originated about 55 yards from the bridge, or about at the spot at which the six-chain curves reverse.

Evidence.

1. *Jeremiah Scanlon*, milesman; 1½ years' service.—It is my duty to walk the line daily, and on September 29th I walked from Listowell station to Liselton to inspect the line, starting about 7 a.m. I found nothing wrong, and I am quite sure the bolts at the tops of the trestles on the Ballybunion side of the Galey bridge were all in their places. I sometimes have to tighten the bolts, but on this occasion I did not find it necessary. I walked back from Liselton about noon, and still saw nothing wrong near the Galey bridge. I next saw the spot the same evening after the accident about 8.30 to 9, when it was dark, and I went to work there next morning. There were a number of trestles out of their place, and the rails were bent, but not broken. I afterwards picked up a bolt in the adjoining field, which had been lately in a trestle head, and one or two more were picked up. The carriage which had been next the engine was nearly up to the bridge.

2. *Joseph Holyoak*, driver; I have been employed as fitter and driver about 25 years, and I have been for two years with this Company. On September 29th I was driver of the 6.30 p.m. train from Ballybunion. It consisted of an engine and tender, running engine first, two carriages, a cross-over carriage, three vehicles, and a brake-van, seven vehicles in all. The Westinghouse brake was applied to the engine, tender, two carriages, and the brake-van, i.e., to one of the two engines on each vehicle. The train was full of passengers. We started nearly to time, and stopped at Liselton with the Westinghouse brake, which acted well, the pressure being over 50 lbs. We left Liselton at proper time, and on approaching Galey bridge I was running at a speed not exceeding six or seven miles an hour (the train being steadied with the engine hand-brake) when the engine was suddenly stopped, just upon reaching the Galey bridge, by the drag of the train and by the automatic action of the brake called into play by the coupling between the engine and the first vehicle breaking when the drag came. It was

sufficiently light about this time, 7.5 p.m., to have seen anything wrong, but I saw nothing before the accident of any trestles being out of their place. No wheels either of the engine or tender left the rails, but all the other vehicles except the last were off the line to the left, but not very far. The tender was separated about four yards from the first vehicle when I stopped. The next morning I examined the road and found some bolts from the heads of the trestles missing; the damage to the trestles extended for the length of the six vehicles which came off the line. Some of the bolts we picked up were broken. I have never known any bolts loosened or removed before. No passengers appeared to be seriously injured. I had last passed the spot going to Ballybunion about 10.45 a.m.

3. *Jeremiah McAuliffe*, fireman; 21 months' service, nine months fireman.—I was with Holyoak on the evening of the 29th September with the 6.30 p.m. train from Ballybunion. All went right till just before the accident, when the speed was not more than seven miles an hour, it having been checked by the hand-brake, it being a rule to go slow at the spot on account of the curves. I had seen nothing wrong, and the accident took me by surprise, when we were suddenly stopped by the carriages dropping off the line and the brake going on owing to the coupling breaking. When we stopped the front of the engine was just on the bridge, and the tender was separated from the front of the vehicle next it by about four yards. I did not find out what had caused the accident.

4. *Robert Lanigan*, guard, overseer of the line and acting as guard Sundays; 21 months' service.—I was in charge of the 6.30 p.m. train from Ballybunion on the 29th September. It consisted of engine, tender, two carriages, cross-over, three carriages, and a brake-van. I was in the brake-van, and one passenger with me. The train was nearly full, with over 100 passengers. The Westinghouse brake was on the last three vehicles. We started about five minutes late, and left Liselton

about five minutes late, and were running at a speed of about six or seven miles an hour when the accident occurred, taking me quite by surprise, the train suddenly stopping. The van remained on the rails, but all the rest of the train was off the line, except the engine and tender, which were separated from the rest of the train by a few yards. The accident took place between 7.5 and 7.10. I saw no one hurt. I have no idea what caused the accident.

5. *Joseph Holyoak*, junior, driver.—I passed the spot where the accident occurred on the 28th September with the 1.30 p.m. train from Ballybunion, and I noticed nothing unusual. The speed was five or six miles an hour there.

6. *Patrick McCarthy*, station-master at Listowell since the opening of the line.—On September 29th I went out in the 3 p.m. train, Listowell to Ballybunion, to assist generally in looking after the passengers, and I noticed nothing wrong when passing the scene of the accident. I returned with the 6.30 p.m. train from Ballybunion in the carriage next behind the cross-over. I had seen driver Holyoak before starting back, and he appeared all right, not the worse for drink, and this I have never seen him. The train was properly stopped at Liselton, when I assisted in collecting the tickets. Just before the accident I had not noticed the speed being unusual, and the accident took me by surprise, the carriage dragging along and stopping suddenly. I saw no one hurt. Five vehicles and the cross-over were off the rails, the two in front being turned over nearly on their sides, and the others less so. After the passengers were got out the vehicles were left as they were till the next morning. A fireman had been discharged a few days previously, and lived about half a mile from the spot. He had shown signs of insanity.

7. *Arthur Gore*, general manager and engineer.—I had walked over the line about a week before the 29th, when, had anything been wrong with the trestles near the Galey bridge, I should have certainly seen it. I

heard of the accident about 9.30 p.m. on the 29th Sept. at Ballybunion, where I reside, and went to the spot by car, reaching it about 10.30 p.m. I then found that six of the seven vehicles which had composed the train were off the rails, the first about 10 yards on the Ballybunion side of the bridge; the van was on the rails. Nothing was done that night, and I could not find any of the bolts which had secured the rails to the heads of the trestles, although the washers were on the ground under the trestles. The next morning I found the trestles from the sixth vehicle onwards inclined towards Listowell; gradually getting worse until there were a group of five or six all together, and all leaning towards Listowell; these were under the cross-over vehicle. The rails were not broken, but had been pulled straight in plan with a droop; the fish-plates and bolts had not given way. Four or five of the trestles at either end of the 30 displaced, remained attached to the rails, and 20 of the others were bent and leaning over to the left; six or seven bolt-heads and pieces of bolts were picked up among the trestles and in the ballast, and three were picked up, two in the adjoining field, and one in the drain; these three had evidently been recently in the rail, and showed no signs of injury or stripping of the threads, which were bright. I have no reason to suspect any one in particular of having tampered with the fastenings. The height of the taller trestles is five feet; these are made of steel $2\frac{1}{4}$ ins. $\times$ $2\frac{1}{4}$ ins. $\times$ $\frac{1}{4}$ in. tied at 27 inches from the top; the trestles had two cross-braces in the length damaged. The rails are 33 ft. long, 27 lbs. per yard, the guides are about 17 feet long, and 12 lbs. per yard. The trestles are all at 39-in. intervals, riveted at the bottom to steel sleepers six feet long, which are attached to wooden sleepers 6 ft. $\times$ 9 ft. $\times$ 3 ft. The engine weighs $6\frac{1}{2}$ tons, tender $4\frac{1}{2}$ tons, the vehicles about three tons empty, and four tons full. The latter carry 24 passengers each, and are about 17 feet long. I had seen McCarthy just before he left Ballybunion, and he was perfectly sober; he is a most respectable man. I have always given special instructions about running at a slow speed round curves.

Conclusion.

This accident, which was happily unattended by serious consequences, occurred close to the Galey bridge where the trestles which support the running rail are 5 ft. high, instead of as usual only 39 inches high. The accident appears to have been due to the absence (either from malice or negligence) of some of the bolts and nuts which should have secured the rails to the tops of the trestles, the passage of the engine and tender round the reverse curves of six chains radius (near the junction of which the rail seems first to have been displaced) forcing the rail from the heads of the trestles, and thus preventing the carriage next the tender and the five following vehicles from remaining on the line. Once off the line the ensuing damages to the trestles (the left legs of which were most of them bent inwards) was inevitable; the automatic action of the Westinghouse brake was most useful in preventing the rear vehicles from running in on the front ones.

The supposition that the absence of the bolts from the heads of some of the trestles was the cause of the accident is probably the correct one, from the fact of the tops of the legs of the first trestles from which the rail was separated not having been damaged, as would almost inevitably have been the case had the rail been torn out of its place by a vehicle having by some means got off the line before reaching the first of the trestles from which the bolt was missing. It is also probable that the absence of the bolts was due to malice rather than negligence, as it is stated by the milesman who had inspected the line at 7 a.m. that the bolts were all then in their place, and at about noon the same day, as well as from the fact that three bolts, which were picked up after the accident, but near to where it occurred (though not close enough to have been thrown by the accident into the places where they were found) were bright, showing that they had been very recently in use; they had no marks of injury or of having the threads stripped.

It is evident that the rate of speed at the time of the accident must have been very moderate, from the short distance the engine travelled, not probably more than, if so much as, 30 yards, after the automatic application of the brake.

In the case of the high trestles, of which there are only a small number, it would, I think, be only prudent not to depend alone on the bolts for securing the rails to the tops of the legs, but to fasten the legs together by a riveted strap close under the bottom of the rails.

The Assistant Secretary,
Railway Department, Board of Trade.

I have, &c.,
C. S. HUTCHINSON,
Major-General, R.E.

Printed copies of the above report were sent to the Company on the 1st January.

LONDON AND NORTH-WESTERN RAILWAY.

Board of Trade, (Railway Department,)
1, Whitehall, London, S.W.,
31st October 1889.

SIR,

IN compliance with the instructions contained in your Minute of the 9th August I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances, which attended the collision, that occurred on the 3rd of that month at Llandudno junction, on the London and North-Western Railway.

The passenger train, which was due to leave Llandudno at 12.40 p.m., and which is timed to meet a main line train at Llandudno junction, ran past the branch line platform and struck a train of empty coaches which was standing in a siding, about 100 yards to the east of the platform at which it should have stopped.

Three passengers are reported to have been shaken.

The engine of the passenger train and the brake-van of the empty coach train which was struck were damaged, and the two hind wheels of the brake-van were knocked off the rails.

The passenger train consisted of a tank-engine, which was running funnel in front, two large passenger coaches, and a brake-van at the tail of the train, in which the guard in charge was travelling.

The engine and train were fitted with the automatic vacuum-brake which could be applied from the engine or van, and there were screw-brakes on the engine and van.

The train left Llandudno about five minutes late and arrived at the junction six minutes late.

Description.

Llandudno junction station is the place where the branch line from Llandudno joins the main line from Holyhead to Chester. The branch is practically level from the level crossing gate distant-signal to the starting signals at the east end of the branch up line platform, and the railway rises 1 in 150 for 103 yards beyond the starting signals.

The distant-signal referred to is about 960 yards from the junction station starting-signal, and the curve, as the branch approaches the junction, has a radius of 10 chains.

The Llandudno junction points and signals are worked from a junction cabin which is situated 31 yards east of the starting-signal. The starting-signal is at the east side of Llandudno junction branch line platform. The level crossing gate up home-signal, which is referred to by the engine-driver, is 282 yards west of the starting-signal.

The passenger train ran past the junction home, and distant, and the starting signals, which were at danger, at a speed variously estimated at 5 to 10 miles an hour, and the speed was not much reduced when it struck the empty coaches, which were driven forward about 30 yards.

Evidence.

David Evans, station-master, Llandudno junction, stated: I was on the down-line branch platform when the 12.40 p.m. train from Llandudno arrived on the 3rd August. The station home-signal which is worked from the level crossing gates cabin was at "All right," and the train arrived at the junction at the proper time, and reached the north end of the Llandudno junction platform at a speed of about eight miles an hour. The train consisted of a tank-engine, which was running funnel in front, two large 42-feet coaches, and a brake-van, with the guard at the tail of the train. The train ran past the platform and ran into a train of empty coaches that was standing on

the siding at the east side of the signal cabin, about 60 yards beyond the platform. I think the passenger train struck the empty coach train at a speed of about eight miles an hour. The brake coach at the tail of the train of empty coaches had the hind pair of wheels knocked off the rails, and the empty coaches were driven forward about 30 yards. The brake coach of the empty train and the engine of the passenger train were damaged. No part of the passenger train left the rails. I did not notice that any brakes were applied to the passenger train when it passed me. There was an up train on the up main line at the time. It was waiting for the Llandudno train. I have

been 31 years in the Company's service and 18 years station-master at Llandudno junction. No passenger complained of injury.

Wm. Evans, signalman on duty at the level crossing gates cabin on the 3rd August, stated: I work up-home and distant-signals towards Llandudno. I took off my home-signal for the 12.40 p.m. train from Llandudno, but I kept my up distant-signal at danger. I never take this signal off unless the disc in my cabin, which is worked from the junction cabin, shows the main line to be clear. The passenger train passed my cabin at a speed of 5 to 10 miles an hour, about the same speed as usual. The train did not pull up at the Llandudno branch line platform. It ran into some empty coaches beyond the station.

Hugh Jones stated: I was on duty as signalman in the Llandudno junction cabin on the 3rd August. I work an up home-signal which is at the east end of the Llandudno junction branch line platform, and an up distant, which is on the same post as the up home-signal for the level crossing gates cabin. Both these signals were at danger when the 12.40 train from Llandudno ran past them. I threw up my up-main line signal to danger at once, and opened the points at the east side of my cabin for the branch train to run from the siding on to the up main line, but it did not reach the points, as the train of empty coaches was standing near my cabin at the west side of the points. A part of the train of empty coaches ran over to the main line after it had been struck by the engine of the branch line passenger train. I did not turn the branch train on to the main line through the junction points, as it had got too close before I knew it would run past the branch line platform. I have been 26 years in the Company's service, and 13 years at my present post. The passenger train struck the empty coaches at a speed of from 5 to 10 miles an hour.

Isaac Davis stated: I was guard of the 12.40 p.m. passenger train from Llandudno on the 3rd August. The up home-signal of the level crossing cabin was at "All right" as the train approached Llandudno junction, but the up distant-signal for the junction box, which is on the same post, was at danger. My train was fitted with the automatic vacuum-brake, which I can work, and I had a screw-brake in my van. I applied the screw-brake before reaching the Llandudno signals. My train was running about 5 to 10 miles an hour at the time. I did not think my train was going to run past the branch line platform, until the driver whistled, when I applied the automatic-brake. My train was at the east end of the platform at the time. I did not feel any particular action on the train from my applying the automatic-brake, and my train struck the empty coaches at a speed of about five miles an hour. I

hardly felt the collision. I got out of my coach and attended to the passengers. None of them complained of injury. I have been 26 years in the Company's service, and 10 years a guard. I started five minutes late, and arrived five minutes late at Llandudno junction.

Alfred Stone stated: I was driver of the 12.40 p.m. train from Llandudno on the 3rd August. My train consisted of a tank-engine, which was running funnel in front, two large coaches and a brake-van with the guard. I had a screw-brake on my engine and in the guard's van; and the engine and train were fitted with the automatic vacuum-brake. I did not know this when I left Llandudno. I thought my train was fitted with the simple vacuum-brake. I did not ascertain what brakes my train was fitted with before starting from Llandudno, as the train was late. As I approached Llandudno junction the up line signal from the level crossing gates was down, the junction up distant was at danger, and the junction up home, which is at the east end of the junction station, was also at danger. I applied the large injector to put on the simple vacuum continuous brake. As I passed the gate up home-signal I was running 7 to 10 miles an hour. The speed was not checked as I passed the platform, when I told my fireman to apply the screw brake, and I whistled for the guard's brake. I kept the large injector open until I struck the train of empty coaches at a speed of about five miles an hour. I and my fireman remained on the engine, and were not hurt. My engine had the buffer castings, sand-box, and vacuum pipe broken. I have been in the Company's service 14 years. I passed as a driver in May last. I came on duty at 6 a.m. on the 3rd August; I went off duty at 6 p.m. the previous day. I kept the small ejector open all the way from Llandudno. This keeps the automatic arrangement in the brake-van, which the Company use with the simple vacuum, effective, and I think, as I had a very small train, this was sufficient to keep the brake block off the carriages, which, with the automatic vacuum arrangement, would otherwise have gone on. I had not stopped on my way from Llandudno to the junction. The carriage examiner at Llandudno spoke to me before I started, but he did not talk about the brake. He merely asked me if my vacuum was all right.

William Chamber stated: I am brake examiner at Llandudno. On the 3rd August I examined the 12.40 p.m. train and found it all right. I went to the driver before he started and told him to work the train "Automatic." He replied, "All right." I did not see him put the pin in to the ejector.

It is my duty to inform each driver before he starts what brake his train is fitted with. I have been nine years in the Company's service and in my present office at Llandudno since last May.

Conclusion.

This collision was caused by the neglect of the engine-driver of the passenger train, who did not ascertain what brake his train was fitted with before leaving Llandudno. This man had been on duty nearly seven hours when the collision occurred.

He believed that the train was fitted with the simple vacuum, which is applied by creating a vacuum with the ejector, whereas the train was fitted with the automatic vacuum brake, which is applied by destroying the vacuum, and when the guard tried to apply the brake, it was kept off by the large ejector, which the driver had put on, in the belief that he had to work the simple vacuum.

The carriage examiner at Llandudno station stated, that he informed the driver before he left that station that his train was fitted with the automatic, but whether he did so or not, the Company's Regulation appended to this report is plain, that it is the driver's duty to ascertain this, when attaching his engine to the train.

I have, &c.,
F. H. RICH,
Colonel, R.E.

The Assistant Secretary,
Railway Department, Board of Trade.

APPENDIX.

LONDON AND NORTH-WESTERN RAILWAY.

Crewe Works, March 1, 1888.

SIMPLE AND AUTOMATIC VACUUM-BRAKES.

Instructions to Drivers.

Drivers are hereby instructed that they must ascertain, when attaching to a train, whether it is to be worked "simple" or "automatic."

Printed copies of the above report were sent to the Company on the 18th November.

LONDON AND NORTH-WESTERN RAILWAY.

Board of Trade, (Railway Department,)
1, Whitehall, London, S.W.,

5th September 1889.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 28th ultimo, the result of my inquiry into the causes of a collision which occurred on the 25th ultimo, at Welford and Kilworth station on the Peterboro' and Rugby branch of the London and North-Western Railway.

In this case the 8.10 p.m. up train from Peterboro' (consisting of engine and tender, one composite and one third-class carriages, brake-van, and fish-truck) when running through the station, at 9.33 p.m., at a speed of between 45 and 50 miles an hour, came into collision with a milk-van, which was standing across the up main line upon a through crossing leading to the sidings from the down main line.

The whole of the train left the rails and came to a stand in about 196 yards, the leading wheels of the engine being then again upon the rails.

The milk-van was thrown forward on to the down main line, and was broken up. The train was not very badly damaged, and no passengers were seriously injured, it being stated that two passengers and the fireman of the train were shaken.

The permanent way was considerably damaged.

The details of the damages to the rolling stock and permanent way are given in the appendix.

Description.

Welford and Kilworth station is a small roadside station upon a double line, running east and west, with sidings upon the south or up side of the line west of the station, and upon the down side of the line east of the station.

The station buildings are at the east end of the up platform, and the signal-cabin at the east end of the down platform. The cabin, a high building, contains 32 levers, of which 11 are spare, and a gate wheel for working the gates at the level crossing at the east end of the platforms.

The up-side sidings are connected with the down main line by a through road, with trailing points on the down main line, about 18 yards east of the west end of the platform, and there are slip points forming a main line cross-over road.

The line falls from the east towards the station upon a gradient of 1 in 232, but is level through the station.

There are distant, home, and starting signals in both directions.

The following distances westward from the signal-cabin should be noted :—

To east end of platform, 5 yards.

To trailing points of through crossing on down line, 111 yards.

To west end of platform, 129 yards.

To point of collision, 150 yards.

From the centre of the down platform to the point of collision is about 83 yards.

Evidence.

Frederick Robinson states: I have been about 12 years in the service and about 10 years a signal-man; seven years at Welford. On the 25th ultimo I came on duty at 6 p.m. for 12 hours. At 8.8 p.m. the 7.35 p.m. down train from Rugby arrived at Welford. It always has a milk-van to drop off on

Sunday nights. This van has to be placed on the sidings on the up side of line, through Nos. 16 and 19 points. After the train had stopped at the platform ahead of No. 16 points I opened the points into the siding, and then I opened the level-crossing gates to allow the mail-cart to cross. I went down to give a

letter to the guard of the train, after I had let the mail-cart across, and had shut the gate and lowered the signals for the train to start. I heard Mr. Rickett, the station-master, who was on the down platform, say to the driver of the train, "That's right: right away." I then went up into the signal-box and closed Nos. 16 and 19 points. When the train first stopped the engine was nearly up to the box, and it had to set back to knock this milk-truck into the siding. I gave no signal for this operation except by showing a white light to the man on the platform when the points were set for the siding. When the station-master said "Right away," the engine was about half-way back along the platform. The train started at 8.11 p.m. For the 8.10 p.m. up train from Peterboro' I received from Market Harboro' "Be ready" at 9.6, which signal I accepted; and "On line" at 9.17. The train arrived at 9.33 p.m., running at I should think, 50 miles an hour, and the engine struck the milk-van, which was standing across the up line, not having been knocked back clear into the siding. It had been a wet afternoon, and it was so dark that although I looked along the line after the down train had left, I could not see the milk-van. I made no inquiry of the station-master, as I had heard him say it was all right. He did not say "All right" to me, but to the driver. I do not know who uncoupled the milk-van. The station-master was almost opposite to the engine when he said "All right," but I saw him coming forward from the rear of the train. I was then on the ground. I do not collect the tickets and did not upon this occasion. The station-master passed my box on the way to his house, but I did not ask him anything about the van. He came forward directly the train had left. I knew that according to the rules the signalman is responsible when shunting that waggons are put clear into the sidings.

Arthur Rickett, states: I have been nearly 22 years in the service, and nearly 10 years a station-master; at Welford nearly five years. On the 25th ultimo I came on duty at about 6 p.m. There had been some rain, but it was fine in the evening, although thick and dull. I was the only person on duty on the platform. The 7.35 p.m. train from Rugby arrived at 8.8, and had as usual a milk-van to put off. When it had stopped the guard uncoupled the van, while I was attending to the train, collecting tickets, and I went back to the tail of the train, and asked the guard if he had the tail lamp off. He said he had. I got into the van, pegged up the spindle to cut off the brake, and got out of the van on to the platform. I then called the driver back. He came back three or four carriage lengths, quite as far as he usually does. I stopped him when I thought he had come far enough to have knocked the van into the siding. I then gave the guard the signal to start, and the train went away. I might have said, "All right," or "Right away," but cannot be certain. I showed the guard a white light. When the train started the engine was just about opposite to me. I was standing between the shed and the signal-box. I am not sure that I did not tell the driver to open his whistle. As soon as the train started I went away to my office. I did not look back to see where the van was standing. I took it for granted that it was clear into the siding. I am certain I took off the brake on the van. I was away in the village when the collision took place. I came down to the station and then found that the up-mail had run into the milk-van. The centre pair of wheels of the engine and all the carriages were off the rails. None were upset. There were 13 or 14 passengers, and one or two made a complaint of injury, but no one was seriously hurt. I was in my office for about 10 minutes after the down train had left. I had no conversation with the signalman, and do not know when he closed the points. Sometimes the signalman asks me whether the van is clear, but he does not make a rule of doing so. Sometimes I uncouple the van myself, and then I get out on the

line and go back by the end of the platform, where I can see the position of the van after it has been knocked back. The platform lamps were not lighted.

Henry Pitts states: I have been about nine years in the service and acting guard about three years. On the 25th ultimo I was guard of the 7.35 p.m. down train from Rugby. It was made up of engine and tender, three coaches and brake-van, and a milk-van for Welford. It had the automatic vacuum brake throughout. I had a shunter with me learning the road, and he uncoupled the milk-van, and put up the side chains, while I brought round the tail-lamp. The shunter uncoupled the brake-pipe and put it on the plug. While this was being done the station-master went behind to see if the points were set right for the crossing, and then got into the van. When he came out he gave the driver a signal to come back to knock the van across. He then gave a red light to stop the driver, and then said "Right away," giving me a white light, and we started. The engine came back a little over the length of three coaches, which is about the same distance as usual. When the train started I was standing near the engine, which was nearly opposite to the waiting shed. The station-master was nearer to the Rugby end of the platform, about 10 or 12 yards from me. My train is due at Welford at 8 p.m. It was a dull night and getting dusk. I think I could have seen a truck about 30 yards. I could see the signal-box from where I stood when the train started. I cannot be sure whether I could when I first got out of my van.

John Hartwell states: I have been about 30 years in the service and about 28 years a driver. On the 25th ultimo I came on duty at 5 p.m. with engine No. 2155. It was attached to the 7.35 p.m. train from Rugby to Market Harboro'. I have driven the same train every third Sunday night for several months. At Welford, when the station-master called me back to knock the milk-van into the siding as usual, I came back about the length of four coaches, about the same distance as usual, and when I stopped, upon receiving a red light from the station-master, my engine was about opposite to the waiting shed. The station-master then said "Right" to the guard, and the guard showed me a green light and I started. It was a beautiful night just beginning to get dusk. When I started I should think I could have seen a truck on the line 300 or 400 yards off. I could see the faces of the passengers on the platform quite plainly. I feel sure that the truck might have been seen from the signal-box. I did not look back after starting except on the platform side.

John Stevenson states: I have been 24 years in the service and 17 years a driver. On the 25th ultimo I came on duty at 7.20 p.m. at Peterboro', with engine No. 1486, a six-wheeled engine with 6 ft. 6 ins. driving and trailing wheels coupled. It was attached to the 8.10 p.m. up train to Rugby, consisting of two coaches, one brake-van and a fish-truck. I had a steam-brake on the engine and tender, and the simple vacuum on the three leading vehicles in the train. I tested the brake before starting and it was in good order. I stopped at Wansford, Sea'on, and Market Harboro', and the brake acted well at these places. I left Market Harboro' at right time. Signals were right for me all the way. I passed Welford signal-box with some steam on, but not much, at 45 or 50 miles an hour, my usual speed. I had no warning whatever of the obstruction until I struck the van. The engine left the rails with all wheels and ran for about 200 yards. When I stopped I found that the leading wheels were on the rails again. The whole of the carriages were off the rails, but the tender was on the rails. The train was pretty well in line, and there were no couplings broken that I could tell, but the brake pipes underneath were all to pieces when we stopped. I pulled the brake on directly I felt the shock. It was quite dark at the time. The milk-van was thrown across the down line.

Josiah Davison states: I have been eight years in the service and a guard for nearly seven years. I came on duty at 8 p.m. on the 25th ultimo. I was guard of the 8.10 p.m. train from Peterboro'. It was made up as follows: engine and tender, one composite, one third-class, brake-van, and fish-truck. I had no warning of the collision, but did not feel much

shock. I was not hurt. There were 14 passengers in the train, all but four or five in the third-class carriage. There was no telescoping of the carriages, although all were off the rails. No passenger was seriously injured, and only one complained to me. We were delayed 1 hour 57 minutes. We were running right time.

Conclusion.

This collision, the consequences of which were not so serious as might have been expected, considering the nature of the obstruction and the speed at which the train was running, was caused by the station-master and the signalman neglecting to see that the milk-van, which was left by the down train at Welford, had been placed upon the siding clear of the main line.

This down train always has a milk-van to put off on Sunday nights, and the usual practice was followed upon this occasion, the train being stopped ahead of the siding points, which were then set for the crossing, and the milk-van, after being uncoupled, being propelled across the up line towards the siding by the train setting back some three or four carriage lengths.

It is stated by all the witnesses that upon the evening in question the train set back quite as far as usual, but from some unexplained cause the van stopped short upon the crossing and did not reach the siding. It was fitted with the automatic vacuum brake, and, were it not that the station-master is certain that the brake was released by him, I would have concluded that the brake had accidentally been left on.

However this may have been, it was clearly the duty of the station-master, who was in charge of the shunting operation, and the signalman, under the rules of the company, to make sure that the shunt had been properly carried out, and that the van was safe upon the siding, clear of the main line.

It was just getting dusk at the time, and the signalman says that he could not see as far as the point of collision, which was 150 yards away from him, but the station-master, who was some 80 yards nearer to it than the signalman, honestly admits that he did not look to see where the van was after the train had started, but took it for granted that all was right. The signalman excuses himself by saying that he heard the station-master say "Right" or "Right away" to the driver, but this had clearly nothing to do with the position of the van.

It is always difficult to get evidence as to the distance at which objects are visible, and on this occasion, while the driver of the train says that the van would have been visible for 300 or 400 yards, the guard thinks it might have been seen for 30 yards. Probably the one estimate is as much too high as the other is too low.

The driver of the up train which came into collision with the van about an hour and 20 minutes later had no chance of seeing it, as it was then quite dark, and he was running fast with clear signals. He shut off steam and applied the brakes promptly, but owing to the breaking of the pipes under the carriages, the continuous brake, not being automatic, cannot have been long in operation.

At the time of the collision the station-master and the signalman had been on duty for under $1\frac{1}{4}$ hours.

The Assistant Secretary,
Railway Department, Board of Trade.

I have, &c.,
(Signed) F. A. MARINDIN,
Major, R.E.

APPENDIX.

DAMAGES TO ROLLING STOCK.

Engine 1486.—Buffers and buffer beam broken ; smoke-box knocked in ; framing bent ; coupling rods bent.	Brake-van.—Brake cylinder, rods and brake work damaged.
Composite.—Brake work and under frame damaged.	Milk-van.—Broken to pieces.
Third-class.—Brake cylinder, rods and blocks damaged ; gas cylinder damaged.	

DAMAGES TO PERMANENT WAY.

For the repair of the permanent way the following new materials were required :—238 chairs, 9 rails, 5 sleepers, 100 spikes, 160 screws, 210 keys, and 134 bolts and nuts.

Printed copies of the above report were sent to the Company on the 21st September.

LONDON AND NORTH-WESTERN RAILWAY.

Board of Trade, (Railway Department.)
1, Whitehall, London, S.W.,
23rd September 1889.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 28th ultimo, the result of my inquiry into the causes of a collision which occurred on the 26th ultimo at Stockport station, on the London and North-Western Railway.

In this case the 4.15 p.m. train from Crewe to Manchester (consisting of engine and tender, two composite carriages, brake-van, two composite carriages, and brake-van, the engine, tender, and leading vehicle being London and North-Western stock, and the remaining vehicles being Great Western stock) ran past the signals at the south end of Stockport, and came into collision (at about 5.4 p.m.) with engine No. 946, which had just attached seven empty carriages to the tail of the 3.40 p.m. train from Liverpool (consisting of engine, tender, and six vehicles), and was standing behind this train upon the down platform line.

The only vehicle which left the rails was the brake-van in rear of the seven empty carriages, four of the wheels of which were thrown off.

The Liverpool train was driven slightly forward.

In all six passengers have complained of injury, but it is stated that none of the injuries are serious.

The following are the damages to the rolling stock :—

Engine No. 229.—Buffer-plank and buffers broken.

Engine No. 946.—Buffer-plank and buffers broken, coal-bunker stove in.

Great Western Composite.—Two axle-boxes broken.

Second-class brake carriage which was knocked off the rails. Two buffer-rods bent, and buffer castings cracked.

Description.

Between Edgeley junction No. 1 box and Stockport station there are two down lines, the down slow line outside, and the down fast line inside, and at Stockport No. 1 box there is also a connexion from the down fast line to the down slow line, which is the platform line. Edgeley No. 2 box is a block signal-box between Edgeley No. 1 and Stockport No. 1, 384 yards from the former, and 421 yards from the latter box.

There are home and distant signals for both lines from all these boxes, and the Stockport No. 1 down home-signals are also repeated by arms hung at the entrance of a tunnel between the home and distant signals. The levers in Stockport No. 1 box working the down distant-signals, also control the distant-signals worked from Edgeley No. 2 box, and there are discs in both Edgeley No. 2 and Edgeley No. 1 boxes working in connexion with the distant-signals from the box in advance, the order being that when a disc is not turned in any box the signalman in that box is to keep his distant-signal at danger. It thus follows that when Stockport No. 1 home-signal is at danger the following signals must be at danger, viz., Stockport No. 1 repeater home-signal, Stockport No. 1 distant-signal, and Edgeley No. 2 distant-signal, while Edgeley No. 1 distant-signal ought also to be at danger if the rule is attended to.

Between Edgeley No. 2 box and Stockport No. 1 box the line runs through three short tunnels whose lengths are 53 yards, 33 yards, and 124 yards respectively, but the line opposite to the platform at Stockport can be seen through these short tunnels from Edgeley No. 2 box.

The following distances southward from the point of collision should be noted :—

To south end of station loop	31 yards.
„ Stockport No. 1 signal-box	116 „
„ „ „ down home-signals	151 „
„ north end of No. 3 tunnel	189 „
„ south end of No. 3 tunnel and down home-repeaters	313 „
„ north end of No. 2 tunnel	335 „
„ south end of „	368 „
„ north end of No. 1 tunnel	394 „
„ south end of „	447 „

To Edgeley No. 2 signal-box	537 yards.
„ „ „ down home-signals and Stockport	
No. 1 down distant-signals	620 „
„ Edgeley No. 1 signal-box	921 „
„ „ „ down home-signals and Edgeley	
No. 2 down distant-signals	1,108 „
„ Edgeley No. 1 down distant-signals	1,805 „

Block working is in force between the three signal-boxes above-mentioned, but, as it is necessary to bring one train in behind another at Stockport, there are special regulations in force, from which the following are extracts:—

Special Instructions for No. 1 Cabin, Stockport.

1. Absolute block must be adopted for passenger trains on the up and down fast lines.
2. The “Be ready” signal must not be accepted from the cabin in rear for a passenger train intended to travel on the down fast line until it has been accepted by the signalman at No. 2 cabin.

3. The “Be ready” signal must not be accepted from the cabin in rear for a passenger train travelling upon the down slow line until it has been accepted by the signalman at No. 2 cabin, except as follows:—

If the down slow line is clear to the station buildings, the “Be ready” signal may be accepted, but the signals must be kept at danger until the train has been brought to a stand at the home-signal. The home-signal may then be lowered, and the signalman must caution the driver as the train approaches the cabin, using a green flag during daylight and a green light at night.

4. The “Be ready” signal must not be accepted from the cabin in rear for a passenger train on the down fast line to travel on the down slow line until it has been accepted by the signalman at No. 2 cabin, except as follows:—

If the down slow line is clear to the station buildings, or the down fast line is clear to the same point, the points must first be set to lead to the line which is thus clear, and the “Be ready” signal may then be accepted. The signals must be kept at danger until the train has been brought to a stand at the home-signal. The home-signal may then be lowered, and the signalman must caution the driver as the train approaches the cabin, using a green flag during daylight and a green light at night.

5. In case the down slow line and the down fast line are occupied between No. 1 cabin and the station buildings, the “Be ready” signal must not be accepted, and the train must be kept waiting at the outside section.

In the present case No. 4 is the rule which specially applies.

The line from Edgeley to Stockport is nearly level, falling very slightly towards Stockport.

Evidence.

James Allman states: I have been in the service for about 20 years, and a driver for over 16 years. On the 25th August I was not on duty. On the 26th August I came on duty at Longsight at 5.15 a.m., and my duty would have been finished at about 6 p.m. I was standing at Crewe from 12.35 to 4.15, but was not regularly booked off duty. My engine, No. 229, is a single engine with a six-wheeled tender. I had a steam brake working blocks on the engine driving wheels and the six tender wheels, and the apparatus for working the vacuum brake simple or automatic. I was driver of the 4.15 train from Crewe. The five Great Western vehicles were fitted with the automatic vacuum brake, and the London and North-Western carriage, which was next to the tender, was fitted with the simple vacuum brake, but it had through pipes, and I worked the automatic brake. Before leaving Crewe I blew up, and my gauge showed over 15 ins. of vacuum. I was shown a white flag by the guard, indicating that all was right in his van. The vacuum was all right upon the journey. On approaching No. 1 Edgeley box, the distant-signal was at danger, and I applied the automatic brake to check the train. The home-signal was off when I sighted it, and I released the brake. The distant for No. 2 Edgeley was at danger, but the home-signal was off when I sighted it. The distant from Stockport No. 1 was at danger,

the repeater home-signal in the tunnel was at danger, and the home-signal was at danger. On sighting the distant-signal for No. 2 Edgeley, I applied the brake. I did not again release it, but kept it on until I came into collision. I was working automatic, but I did not insert the pin in the quadrant in which my brake lever works. I forgot to do so. I did not use the brake handle, but used the air-valve on the panel on the left-hand side of the engine. I did not use the ejector handle at all until I got to Edgeley No. 1 box. I pulled the handle from me to work the valve placed on the outside of the cab. I passed Edgeley No. 1 distant-signal at a speed of about 35 miles an hour, but my brake was on and I was prepared to stop at the home-signal if necessary. I passed Edgeley No. 2 distant-signal at a speed of about 30 miles an hour, but I had sighted No. 2 home-signal off before I passed the distant-signal. Stockport No. 1 distant, repeater, and home signals being at danger, I knew that I would have to stop at the home-signal. I also sighted the other train at the platform before coming out of the tunnel. I am well acquainted with the signals at Stockport, having been working upon this part of the line all my service. I know that the signalman at Stockport No. 1 is, under special regulations, allowed to accept trains when there is a train at the platform. I know that I ought to have been

prepared to stop at the home-signal. I was running about 18 minutes late, but was not making up time, and I do not think my speed was any higher than usual. I have only driven this particular train once before, and then it was of the same weight, and I had no difficulty in stopping at the home-signal. I do not think that the brake was out of order. I can only account for the accident by thinking that when I applied the brake full power at the distant-signal for Edgeley No. 2, the wheels skidded. My brake was hard on all the way from there into the station. I cannot say whether or not the hand brake on the tender was screwed on. I think the speed was about five miles an hour when I struck the other engine. I had reversed my engine just upon entering the first tunnel, sand was applied, and I also whistled for the guard's brake. The weather had been clear, but on approaching Stockport I noticed that the rails looked very black, and I think it must have been raining. When I got to London Road I had the train tested, and the brake was all right. I had the engine tested at Longsight, and it was all right. I sighted Edgeley No. 1 distant-signal before I reached Adwood loop.

Samuel Monks states: I have been six years and eight months in the service, and four years a fireman. I know the signals at Stockport very well. On the 26th August I was fireman to driver Allman. I have heard my driver's evidence read over and it is correct. I opened my sand-box before we got to No. 2 box, and after my driver reversed I opened the regulator, because he was occupied in whistling. I did not screw up the tender brake, as it was on by the action of the driver in applying the steam brake. I knew that we were working automatic and not simple vacuum, and I am sure that my driver applied the automatic brake in the proper way. The brake gauge was showing 18 ins. of vacuum before the brake was applied. The small ejector was going all the way from Crewe, until it was shut off at No. 2 box. I noticed nothing particular in the running until after we passed Edgeley junction, and then the train did not seem to pull up properly.

Isaac Sutton states: I have been in the traffic department for 11 years, and in the service for three years before that. I have been a brakesman for four years. I have at times worked as a guard, and for the last three weeks have been acting as guard of passenger trains. I have been instructed in the use of the automatic and simple brakes by the carriage department. Upon the 26th August I came on duty at 8 a.m. I was guard of the 4.15 p.m. train from Crewe to Manchester, which was made up as follows:—Engine and tender and London and North-Western composite, Great Western composite, Great Western brake-van, two Great Western composites, and Great Western brake-van. The train was fitted with the automatic brake. I cannot say how the London and North-Western vehicle was fitted. I do not know whether it was fitted with the automatic brake or only with the pipe. When we started the gauge in my van showed 18 inches of vacuum, and continued to show this amount throughout the journey. I looked at it three or four times. I showed the driver the white flag before starting. We left Crewe at 4.33, stopped at Holmes Chapel for examination, and arrived at Stockport at 5.4 p.m., 16 minutes late. We came to a dead stand at Holmes Chapel, the second station from Crewe, on account of the "Stop and examine" signal having been sent. I believe this was because a door had been open. Approaching Stockport I heard the driver whistle for the first time when the engine had just entered the first tunnel, and my van was just passing Edgeley No. 2. I applied the hand brake. I did not apply the automatic brake, as I did not think it necessary. I think we were then travelling at 10 or 12 miles an hour. I did not think we were travelling too fast. I saw all the distant-signals at danger. The brake indicator in my van shows the pressure in the reservoir. There is no indicator to show the vacuum in the brake-pipe. The indicator

continues to show the vacuum after the brake is applied. I can tell when the brake is applied only by feeling it. I felt the brake applied when approaching Edgeley No. 1. It was then released. I did not feel it go on again at all. I was close to No. 2 box when the driver whistled for the brake and when I applied the hand brake. I am sure that I would have felt the application of the automatic brake. It cannot have been on all the way from Edgeley junction. It is impossible. If it had been on the train would have been pulled up long before we got to Stockport. I estimate the speed at the time of the collision at nearly 10 miles an hour. The train was fairly full. One or two passengers complained of injury, but I did not see any one seriously hurt. No vehicles left the rails.

Thomas Barnes states: I have been in the service 14 years, all the time as signalman. I have been in Edgeley No. 1 box nearly six years. I came on duty in this box at 2 p.m. on the 26th August for eight hours. There are 74 working levers in the box. I work block in both directions. I have no distinct knowledge of the passing of the 4.15 train from Crewe, as the telegraph boy omitted to book it. If my down distant-signal had been off for it, it would have been so recorded in this block telegraph book. My down home-signal was off I am sure, as I did not stop any down train on the main line. The reason my down distant-signal was not off was because the signalman at Edgeley No. 2 had not turned the disc in my cabin, worked in connexion with his down fast line distant-signal. I had no special reason for remembering this train, so I cannot speak as to the speed, state of brakes, &c.

William Mabin states: I have been in the service 14 years, a signalman 9 years, and in my present position 12 months. I came on duty at Edgeley No. 2 box at 2 p.m. on August 26th for eight hours. There are 40 levers in my box, and I work block under the ordinary rules. I remember the 4.15 p.m. train from Crewe passing my box. My down fast line distant-signal was at danger, but the home-signal was off. The home-signal was lowered after I had received the "Train entering section" signal from Edgeley No. 1, because Stockport No. 1 had not accepted the "Be ready" for this train until after I had received the "Train entering section" signal. My down fast line distant-signal was at danger because Stockport No. 1 had not turned the disc worked in my box in connexion with his down fast line distant-signal. According to my instructions I must keep my distant-signal at danger until the disc is turned. I estimate the speed of the train as it passed my box at about 25 miles an hour. That is an unusual speed, but I did not see any reason why the train should not be stopped at Stockport No. 1 home-signal. Steam was off. I did not see that the brakes were on. The wheels were certainly not skidding. I watched the train away into the tunnel. I saw the driver as the engine passed. He had the vacuum brake handle in his hand. I did not notice that the rails were being sanded. I did not hear any whistling at all.

A. R. Bancroft states: I have been in the service for seven years, and a signalman for six years; in Stockport No. 1 box for two years. There are 60 working levers in the box. I work block both ways, and there are special instructions in use. On the 26th August I came on duty at 2 p.m., for eight hours. The 4.15 p.m. train from Crewe was offered to me 4.56 p.m. I did not accept the "Be ready" because I was letting in another train. It was offered again at 5.1 p.m., and I then accepted it in the usual way. It was given "On line" at 5.2 p.m., and passed my box at 5.3 p.m. All my signals were at danger. My home-signal lever works a home-signal and a repeater, and my distant-signal lever works the distant outside No. 2 Edgeley, and it also controls the distant-signal from No. 2 Edgeley which is outside No. 1. It works a disc in Edgeley No. 2 box. I cannot estimate the speed of the train when it passed

my cabin. It was coming at about the usual speed of trains running in when the signal is off. The Liverpool train was standing at the down platform. It had arrived at 5.1. It is booked at that time, but it had arrived about half a minute earlier, and that is the time when the empty carriages had been put on behind it by the engine. These carriages had formed a local train from Manchester.

John Bowler states: I have been about 30 years in the service, and about 20 years a driver. On the 26th August I came on duty at 3.30, with engine No. 946, an eight-wheeled tank engine, four centre wheels coupled. I came from London Road to Stockport with the 4.30 p.m. local train, and after it was unloaded I drew forward into the tunnel. After the Liverpool train had arrived, I backed the carriages to be attached to the tail of this train as usual. When the carriages were attached I waited behind them to follow the train away when it started. I had stood about 1½ minutes when the Crewe train ran into me at a speed of about five or six miles an hour. I heard the engine whistling and then saw it entering the platform. The driver gave me a hand-signal and I tried to push the Liverpool train up a bit, but was not able to do so as the automatic brake was on the train. The driver of the Crewe train seemed to be doing all he could to stop. The rails seemed to me to be dry.

Adam Hitchenough states: I have been 26 years in the service, and 20 years a guard. On the 26th

August I came on duty at 7.35 a.m. I was guard in charge of the 3.40 p.m. train from Liverpool, and arrived at Stockport at 4.59. The train consisted of six vehicles in the following order: engine and tender, brake-van, two composites, two third-class carriages, and brake-van. The train was fitted with the simple vacuum brake. At Stockport several vehicles were attached to my train in rear, but they were detached after the mishap. When the collision took place I was on the platform opposite to the tail of my own train. I did not notice that the train was driven forward at all. No vehicle in my train left the rails. No passenger complained of inquiry.

Samuel Newton states: I am platform inspector at Stockport, and have been 10 years in the service. On the 26th August I was on duty on the down platform when the accident happened. I was standing near the front of the Liverpool train. The carriages which were being attached behind the Liverpool train were seven carriages which had formed the 4.30 p.m. train from London Road to Stockport, and were as usual attached to the down train. They were brought back to the tail of the Liverpool train by their own engine. After seeing these carriages coupled on I went up the platform, so I did not see the collision. One or two passengers had got into these carriages, but they were not hurt. I think three in the Liverpool train complained of injury. The train was driven forward slightly.

Conclusion.

From the foregoing evidence it appears that the 4.15 p.m. down train from Crewe approached Stockport upon the down fast line, with all the Stockport No. 1 signal-cabin signals at danger, and the distant-signals worked from the two next signal-cabins also at danger, that the driver was quite aware that he had to stop at Stockport No. 1 down home-signals, and yet that, with a train fitted with a continuous brake in operation upon all but one of the six vehicles, he over-ran the home-signal, and while still running at a speed of five or six miles an hour, came into collision with another engine 151 yards inside the point at which the train should have come to a stand.

According to the driver's statement he applied the continuous brake at full power when he sighted Edgeley No. 2 distant-signals, which are 1,108 yards outside the point of collision, and did not again release it, the speed of the train at the time of passing this distant-signal being estimated at 30 or 35 miles an hour. He also states that he whistled for the guard's brake, applied sand to the rails, reversed his engine, and applied the steam brake when entering No. 1 tunnel, when he was 447 yards from the point of collision.

In the latter part of his evidence he is supported by his guard, who states also that upon hearing the whistle he put on his hand-brake, but the former part of his statement is contradicted by the guard, who says that the continuous brake was, to the best of his knowledge, not applied at all after it had been released outside Edgeley No. 1 signal-box. The speed of this train when passing Edgeley No. 2 signal-box is stated by the signalman to have been an "unusual" speed, and is estimated at 25 miles an hour; and the speed when passing Stockport No. 1 signal-box was considered by the signalman to be about the usual speed that trains would run when the home-signal was off, and the line clear to run up the platform line.

The former of these two signalmen did not see that the brakes were on, and says that the wheels were certainly not skidded. Even if the evidence of the guard be left out of consideration, it is absurd to suppose that the train could have run with the continuous brake on from the point where the driver says that he applied it, considerably more than 1,108 yards, whether the wheels skidded or not, and it is clear that for some reason or another this brake was not applied. The engine was fitted with an apparatus which, in the transition state of the brakes upon this line, the London and North-Western Railway Company have found to be necessary, so that either the simple vacuum or the automatic vacuum can be worked. The action of the brake handle in applying the one being the reverse of that in applying the other, a driver who had the automatic brake to work would take the brakes off if he "pulled" instead of

"pushed" the brake handle, and the steam brakes on the engine and tender only would act.

The driver, however, although he admits that he omitted to put into a hole in the quadrant a split pin, which according to the rules should be put into one hole when the simple brake is worked, and into another when the automatic brake is worked, is quite sure that he did not make any mistake in the action of applying the brake, and says, indeed, that when he applied the brake at Edgeley No. 2 distant-signals he did so by opening the ordinary simple vacuum release valve at the side of the engine, and did not use the brake handle at all. Moreover, the signalman did not hear the big ejector blowing, which would have been the case if the handle had been "pulled" instead of "pushed."

Giving to the driver the credit of thinking that he applied his continuous brake before getting to Edgeley No. 2 distant-signals by opening the air-valve, I believe that he did not do so properly, and, consequently, that until he used the brake handle to apply the steam brake after passing Edgeley No. 2 signal-box and so also put on the vacuum brake, the train was running without any brakes on at all.

Even then, unless there was extraordinary skidding of the wheels, the train should have been pulled up at the home-signal, if the speed had not been very high.

The collision must be attributed to the neglect of the driver in omitting to get his train under proper control when approaching Stockport with the signals at danger, and I think that the guard, besides applying his hand brake, ought to have opened the valve in his van to apply the continuous brake when he heard the driver whistling.

The signalman in Stockport No. 1 box was justified under the special regulations in accepting the 4.15 train when the line was occupied only 151 yards inside his home-signal, and would indeed have been justified in doing so with a margin of only 120 yards. I cannot think that this is right, for it is working under a system which cannot properly be called the "absolute block system," safety depending entirely upon the due observance of the home-signal, the position of the outside distant-signals being merely an indication to the driver that he must stop at that signal.

The ordinary block regulations provide a block signal to meet the case where one train has to be brought in behind another at a station, which is precisely the state of things at Stockport. This signal, given instead of the "Line clear" signal in reply to the "Be ready" signal, is the "Section clear but station blocked" signal, and under it a driver is only allowed to approach after being stopped and cautioned at the block signal-cabin receiving this reply.

The officers of the Company state that it would be impossible to adopt this method of working at Stockport on account of the delay which would be caused, but similar statements have been made at various times as to the adoption of any block working at all and have been found to be unfounded, and with the evidence given by this collision of the danger of the present practice I trust that the safer one may be tried.

At the time of the collision the driver had been on duty for about 12 hours and the guard for about 9½ hours.

I have, &c.,
The Assistant Secretary, F. A. MARINDIN,
Railway Department, Board of Trade. Major, R.E.

Printed copies of the above report were sent to the Company on the 11th October:

LONDON AND NORTH-WESTERN RAILWAY.

Board of Trade, (Railway Department),
1, Whitehall, London, S.W.,

SIR, 19th September 1889.

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 3rd instant, the result of my inquiry into the causes of a collision which occurred on the 1st instant, at Crewe station, on the London and North-Western Railway.

In this case the 8 p.m. down passenger train from London to Carlisle, when entering Crewe station at about 11.33 or 11.34 p.m., was by a mistake turned on to No. 1 bay line instead of on to the down loop line as usual, and came violently into collision with the buffer-stops.

The train was made up as follows:—Engine No. 1480 and tender, fitted with steam brake, and apparatus for working continuous brake; engine No. 2187 and tender, fitted with steam brake and apparatus for working continuous brake; two London and North-Western horse-boxes, four-wheeled vehicles, fitted with through pipes; one London and North-Western parcels van, six-wheeled vehicle; one London and North-Western sleeping composite, six-wheeled vehicle; one West Coast third-class carriage, six-wheeled vehicle; one West Coast composite carriage, eight-wheeled vehicle; one London and North-Western sleeping saloon carriage, eight-wheeled vehicle; one West Coast sleeping saloon carriage, eight-wheeled vehicle; one West Coast brake-van, six-wheeled vehicle; one West Coast composite carriage, eight-wheeled vehicle; one West Coast sleeping composite carriage, six-wheeled vehicle; one West Coast brake-van, six-wheeled vehicle; one London and North-Western sleeping saloon, eight-wheeled vehicle; one London and North-Western composite carriage, eight-wheeled vehicle; and one London and North-Western brake-van, six-wheeled vehicle; the last 13 vehicles fitted with the automatic vacuum brake.

The leading engine crashed through the buffer-stop, which was fitted with hydraulic buffers, and came to a stand with about two-thirds of its length upon the platform beyond the stop, but none of the vehicles behind left the rails, except the fifth vehicle from the front, a West Coast third-class carriage, which was telescoped into the sleeping composite carriage in front of it. With the exception of these two the carriages were not badly damaged.

Eight passengers are returned as having been injured, and the injuries of three of them are serious. The conductor of the train was also shaken.

A return of the damages to the rolling-stock is given in an Appendix.

Description.

From Stafford to Crewe there are four lines of rails for passenger traffic, running from south to north, the up and down fast lines on the east side, and the up and down slow lines on the west side, and there is also a down goods loop outside the down slow line for some distance south of Crewe.

At the south junction cabin these lines are joined by the North Stafford line from Stoke on the east side, and by the Salop line on the west side, and there are also main line junctions, the main line running straight forward through the station, where it is divided into platform and through lines, and a line diverging to the west, and to the south station cabin, where there are junctions for the goods lines, the down loop, which runs at the back of the down platform, and the down bay lines No. 1 and No. 2.

The south junction (or No. 1) cabin contains 87 working levers, and the south station (or No. 2) cabin contains 73 working levers, the two cabins being 253 yards apart.

The following are the only signals to which it is necessary to refer:—

1st. The south junction down fast line home-signals, which are upon two posts 190 yards south of the cabin, and on the east side of the railway; the left-hand and the lower of the two signals being for the line leading to the goods line, the down loop, and the down bays, and the right hand and higher of the two being for the straight line into the station.

2nd. The south junction down slow line home-signals, which are upon two similar posts on the opposite side of the railway, the arms upon these posts being ringed, and the left hand and lower post carrying two arms instead of one, there being two roads from the down slow line leading to the down loop and bays.

These signals and the junction points are not controlled in any way from the station cabin. The signals are well placed and can be seen for a long distance outside the down distant-signals, of which there are two, one for the fast and one for the slow line, both 800 yards from the signal-cabin.

3rd. The south station down splitting signals, which are a group of signals on two posts 83 yards south of the south station signal-cabin, on the west or left side of the down line.

The left-hand post carries two arms applying to the goods line junction, and the right-hand post carries three arms, the top arm being the signal for the down loop line, the middle arm for No. 2 bay, and the bottom arm for No. 1 bay.

These signals and the points to which they refer are not controlled in any way from the south junction cabin.

The signals can be plainly seen from an engine approaching on the down lines from the south junction down distant-signals, and for some distance beyond these signals.

The all-right light at all these signals is a green light.

There is no outside down distant-signal worked from the south station cabin, but there are discs worked inside the south junction cabin.

Block working is in force between the two cabins, and there are special regulations for working, a copy of which, so far as they refer to the down loop and bays, is given in the Appendix. The two cabins are also in telephonic communication with each other and with the platform, and the south junction cabin is in telephonic communication with the adjacent cabins on the main line and the Salop line, and there is also a speaking telegraph instrument in the cabin which is in use on week days when there is a telegraph boy on duty, but not on Sundays.

Basford Wood is the next block signal-cabin southwards on the main line.

The telephone for communicating with the south junction cabin from the platform is in the inspector's office on the up platform, and that for the south station cabin is on the platform.

The "Be ready" signal for a down express train given from the south junction to the south station cabin is the same for a train running upon the fast line and for one upon the slow line.

When trains are running out of time, that is when a down train from London is running ahead of a down train from Birmingham which connects with it at Crewe, it is the duty of the signalman in the south junction cabin to let the signalman in the south station cabin know of it by telephone.

On week days the south junction signalman gets this information by telegraph, but on Sundays it is the duty of the platform inspector to let him know by telephone, the information as to the running of trains being sent by telegraph from Stafford and Nuneaton to the office on the up platform. If no information is sent to the signal cabin it is taken for granted that the trains are running correctly, relatively to each other.

The trains from Birmingham usually, but not invariably, approach upon the slow line, and the trains from London upon the fast line.

The 8 p.m. down train from London always runs into the down loop line, and the 10.15 p.m. from Birmingham, which connects with it, into No. 1 bay line.

The following distances, measured southwards from the buffer-stop on No. 1 bay line, should be noted:—

	Yards.
To south end of platform - - - - -	120
To junction of the bay line - - - - -	188
To centre of south station cabin - - - - -	230
To points of the junction of down bay and down loop lines - - - - -	240
To splitting signals worked from south station cabin - - - - -	326
To junction points of down main and down bay lines worked from south junction cabin - - - - -	425
To centre of south junction cabin - - - - -	483
To south junction down home signals - - - - -	670
To south junction down distant-signals, from which point the south station splitting signals can be seen - - - - -	1,283

The line falls towards Crewe from the south for nearly ten miles upon gradients of 1 in 330, 1 in 177, 1 in 250, and 1 in 330, the last gradient extending over about two miles.

It is level from a little south of south junction through the station.

The place at which the engine of the 8 p.m. down train usually stops upon the loop is about 107 yards north of the stops upon the bay lines.

Evidence.

Thomas Bailey states: I have been about 18 years in the service, and about 16½ years a signalman. On the 1st inst. I came on duty at 6 p.m. in the south junction box at Crewe for 12 hours (being a Sunday tour of duty). There are 87 working levers in the box. I work absolute block both in and out, under a special code, and I have telephonic communication with the adjacent boxes. The 10.15 p.m. down train from Birmingham is due at 11.31, and usually arrives before the down express, due at 11.35, with which it connects. Both these trains always run into the back of the station. We do not book trains at the south junction. On week days there are two men on duty

in the box, and a telegraph boy. On Sundays only one man. At about 11.24 I got the "Be ready" from Basford Wood for a down express on the fast line, and I accepted it. I passed it forward to the station box, and it was accepted. The disc in my box for the down loop and bays, worked from the station box, was then pulled off, and I lowered my down fast line signals. I did not at the time know whether it was the London train or the Birmingham train, as sometimes the latter comes on the fast line, although usually on the slow line. The train passed my box at about 11.35, and I then saw that it was the London train. It was running very fast, at

30 miles an hour I should think, with steam off. I did not see any fire from the wheels as if the brakes were on as usual. The driver gave two sharp whistles after he had passed the station box. About the time that the train was back at Basford Wood I saw the signal for No. 1 bay line lowered on the three-armed post at the station cabin. A little later, when the train was approaching my box, the signalman in the station cabin asked me, "Is that the Birmingham or the London train coming in?" I answered that I did not know, that I had had no information. I did not ask the signalman at Basford Wood. I went to the window to look out, and as soon as I saw that it was the London train I ran to the telephone and told the south station signalman. The engine must have passed the station box before he could have taken that message. There is only one bell instrument for down trains to the loop and bays between my box and the station box, and I give the same number of rings for a down express (four rings) whichever line it is coming off. For down trains to main line and platform there is a different bell and a block instrument, but the number of rings is the same. The "All right" signal-lamps at my signals are green. The back lights are green when the signal is on and white when they are off. I do not think it possible for a driver to mistake a green back light on my signals for a green "All right" signal on the post worked from the station cabin. There has been no mistake like that which led to this accident since I have been here. It is the practice when sending the "Be ready" to the station-box to let the signalman there know if the London train is coming first. On ordinary nights I learn that by telegraph from Stafford, but on Sunday night, when there is no telegraph boy on duty, information is generally sent from the inspector's office at the station to my box by telephone—when trains are running out of course. I got no information that night. The Birmingham train was close behind that night.

John Cox states: I have been about 16 years in the service as signalman, at Crewe all the time. I have been in the station-box for about 15 years. The existing box was opened about 10 years ago. There are 73 working levers in it. On Sundays there is only one man in it, on week days there are two for the greater part of the day. On the 1st September I came on duty for 12 hours, the Sunday night tour of duty. The 10.15 down train from Birmingham generally arrives before the 8 p.m. down express from London, and always runs into No. 1 bay line. It is due at 11.31. The 8 p.m. always goes down the loop. As a rule when we get the "Be ready" from the south junction box for either of these trains, the signalman there tells us on the telephone which it is. This is done only when it is the 8 p.m. which is coming in first. If we do not get any telephone message we take it for granted that it is the Birmingham train which is coming. This train is the only express train which runs into the bay line. We do not book trains in the station box. At about 11.27 or 11.28 I got the "Be ready" for a down express train. This signal is four rings on the bell, and is the same for all express trains running to the loop or bays. I accepted the signal by one ring on the gong, and I took off the disc in the south junction cabin applying to the loop and bays. I got no message on the telephone, so I made the road for No. 1 bay and took off No. 70 signal. I then went on with my other work for about five or six minutes, and then upon going to the window I saw by the back light that the down home-signal for the fast line, worked from the south junction, was off. As the Birmingham train usually comes on the slow line that made me anxious, and I went to the telephone and asked the signalman in the south junction box whether he was sure that it was the Birmingham train. He said "It should be." He did not say that he did not know. When I asked him the engine was about passing his home-signal. As the train was passing his box he told me

that it was the London train. All these messages passed without any interval to speak of. The leading engine of the train passed me before I could get to the window to make any signal, and it was too late for me to make any attempt to shift the points. I threw my signal up as soon as possible, but the leading engine must then have passed it. I should say that the train was running very fast, 30 miles an hour at least. That is not an unusual speed for trains going up the loop, although some drivers going up the loop come in a good deal slower. Steam was off. I do not think the brakes were on at all until I whistled to call the driver's attention. As soon as I whistled one of the drivers gave two "pops," and the brakes went on immediately afterwards. My signal lamps were burning properly and I am sure that it was the signal for the bay which was lowered. The interlocking is quite right, and nothing has been done to the frame since the collision. I think it would be an advantage always to know in the station box which train it is which is coming in. If the usual practice had been followed I would have known on this occasion that the London train was coming first.

William Benbow states: I have been 17 years in the service, and platform inspector for 13 years, of which I have been two at Crewe. I was on duty on the night of September 1st, and I was in charge of the station. I came on duty at 6 p.m. When the collision occurred I was crossing the main line from the up to the down platform, not far from opposite to the end of No. 1 bay line. I saw the train running in. As soon as I saw it I saw that it was the London train, and that there would be an accident. It was running in much too fast to be able to stop short of the buffer-stop. I did not hear any whistling. I cannot speak as to the action taken by the drivers in respect to the brakes. I know that they were on, because I released them after the accident. I saw the engine strike the buffers. I cannot estimate the speed. It was certainly much faster than I could walk. The leading engine knocked away the buffer-stop, which had hydraulic buffers, and mounted the platform. About half its length or two-thirds of its length were on the platform. All the vehicles behind were on the rails, but the West Coast third-class carriage, the fifth from the front, was telescoped into the sleeping composite in front of it. With the exception of these two the carriages were not badly damaged. Several buffers were bent. I assisted to get the injured passengers out. There were two badly injured in the third-class carriage, but I went away to attend to other duties when Mr. Humphries, the station-master, had arrived, so I cannot give particulars as to the injuries. I did not speak to either of the drivers. On Sunday nights when trains are running out of course it is the rule for information to be sent from the inspector's office to the south junction box by telephone. On this night the 8 p.m. train from London was running out of course, being ahead of the Birmingham train. I got the information from Stafford that the 8 p.m. passed at 11.4, the right time, and that the Birmingham train left at 11.16, 17 minutes late. I got this by telegraph. I did not send this information to the south junction box, as I got it too late. I received it at 11.30. My train reporter, or the man who does this duty on Sunday nights, went to the telegraph office at about 11.15, as he told me, and came to me on the up platform and informed me that the trains were not yet on. He came again at 11.29, and told me how the trains were running. I went out and looked at the clock and it was past 11.30. I was on my way to the telephone, which is against the station-master's office, so as to inform the station box. The telephone to south junction box is in my office. The 8 p.m. London train was then just about passing the south junction. That was a little before the proper time for the London train to arrive, and that made me think that after all it was the Birmingham train, and that a mistake had been made in the message from Stafford. Even if I had sent a telephone message to

the south junction cabin as soon as my train reporter told me how the trains were running it would have been too late. I did not look at the clock when the collision occurred, but it must have been before 11.34, because the up Bangor mail, due at 11.34, which was running to time, had not arrived, and was not in sight at the time. I went to the telegraph office myself between 11 and 11.5 p.m. to inquire, and at that time no information had been received as to the down trains. I do not know whether the train was telegraphed from Tamworth. It was the first of this train being before its time which made me think there had been a mistake. I did not notice the position of the signals at that time. I saw one signal being put to danger, but cannot tell exactly which it was. Trains going up the loop generally come in at a speed of 10 or 12 miles an hour at the end of the platform. Some come much faster than others. Both continuous brakes and hand brakes are generally used. I would not like to say that always trains come in at such a speed that they could stop by means of the hand brake only. I have never checked or reported a driver for coming in too fast. I consider that it is the duty of the train reporter to keep me informed as to the running of trains, as well as to mark the times upon the board. I have not told porter Phillips this in so many words, but it is well understood that that is his duty. His only fixed work that night was train reporting, but he was expected to do other work when not so occupied. Porter Phillips was perhaps in my office for a minute.

Arthur Walter Phillips states: I have been over three years in the service as porter at Crewe. On Sunday nights I come on duty at 6 p.m. It is part of my duty to book the running of down trains on the board upon the down platform, getting the information from the telegraph office on the up platform, or from the board outside the telegraph office. It is not my duty to tell the inspector how the trains are running, but only to chalk the times on the board for down trains. On September 1st I went to the telegraph office shortly after 11—I should say between 11.10 and 11.15—and I said to the telegraph clerk "Have you anything on yet," he said "No." I went out of the office and looked at the board. There was nothing marked on it. I went back between 11.20 and 11.25. I went to look at the sheet and the clerk had just entered the running of the 8 p.m. from Euston, and the 10.15 p.m. from Birmingham from Stafford, and the 8.30 from Euston from Tamworth. I then went and told the inspector how the trains were running. It would be about 11.27 or 11.28 when I told him. The times were not marked upon the board outside the telegraph office. I stood inside the inspector's office for a minute or two talking, and it was about 11.30 when I came out of the office. I had some work to do upon the down platform, and that was the reason for my leaving 10 minutes between my two visits to the telegraph office. I did not look at the sheet the first time I went to the office. When I went to the inspector's office it was for the purpose of asking him whether he would keep the 8 p.m. train waiting for the Birmingham train, which was running late. I did not know that the signalmen were informed from the inspector's office how trains were running. I thought they were informed from Stafford direct, as upon week days. I do not recollect seeing Mr. Benbow or going to his office after my first visit to the telegraph office. I feel positive that I did not do so. I did not look at the clock when the collision occurred. I booked the time of the arrival of the train at 11.34. That was booked some time after the collision, and it was from a guess at the time. I booked it 11.33 first, and altered the entry as I found it must have been a mistake, Mr. Humphries having ascertained the time the train passed Basford Wood. Before I entered the time Mr. Benbow told me the time must have been 11.32 or 11.33.

Frederick William Bull states: I have been about 17 years in the service of the Company as telegraph

clerk, all the time at Crewe. I was on duty on the night of the 1st September. Porter Phillips came to my office after 11 p.m., but whether he came once or twice between 11 and 11.30 I cannot say for certain. I rather think he came twice. He asked for information as to the running of down trains, and went straight to the sheet as usual. I think that the first time he came I had entered the running of the tourist train, but am not sure. If Phillips says that the first time he came I told him I had nothing on, I will not say that he is wrong. My time sheet shows that I received a signal from Stafford at 11.9, that the 8 p.m. train was running to time, and in "advance of 9," that is the Birmingham train. I entered this at once. At 11.25 I got a signal from Stafford that the Birmingham train had left at 11.16, which is 17 minutes late. This I entered at once. To the best of my recollection Phillips came in again just as I was making this entry. That might have been at 11.26 or 11.27. Phillips' first visit must have been before 11.9. I am certain of that. I did not chalk up the times on the board outside the office. I never have done it on Sunday nights for down trains, because the train reporter always comes and asks for the information. I heard the sound of the collision plainly. I looked up at the clock, and I think it was 11.37, but am not sure that it was not 11.33. I probably made the entry of the postal train passing Tamworth and that of the Birmingham train leaving Stafford at the same time, but I am certain that I entered the time of the 8 p.m. train before that. I have been to my office and refreshed my memory, and it was 11.35 when the collision occurred by my clock. I do not know how the clock compares with the station clock.

Joseph Raynor states: I have been in the service of the London and North-Western Railway Company or West Coast Joint service for 24 years. I have been a conductor for nine months; and was guard for about 16 years. On the 1st September I came on duty at Euston at 7 p.m. I was conductor of the 8 p.m. tourist train to Perth. It was made up as follows:—2 engines and tenders; 2 horse-boxes, London and North-Western; 1 parcels sorting van, London and North-Western; 1 sleeping composite, London and North-Western; 1 third class, West Coast; 1 composite, West Coast; 2 sleeping saloons, London and North-Western, and West Coast; 1 brake-van, West Coast; 1 composite, West Coast; 1 sleeping composite, West Coast; 1 brake-van, West Coast; 1 sleeping saloon, London and North-Western; 1 composite, London and North-Western; 1 brake-van, London and North-Western. I was riding in the front brake-van, the ninth vehicle from the engine. It was a dark but a clear night. It was not raining. We started at right time. There was not anything unusual in the running until we were stopped by signal at Trent Valley junction south of Stafford station. We proceeded at once, and the signals were right all the way to Crewe. We passed Stafford at 11.5. I saw the south junction signals at Crewe off for us. I did not catch sight of the signals at the station cabin. We passed the south junction at a speed of from 18 to 20 miles an hour. It struck me that this speed was a little higher than usual, but there was nothing to alarm me. I had no warning whatever of the collision until I was knocked over senseless. I do not know how long it was before I came to myself. I went on to Perth, and have worked back, but feel rather bad. I should think the speed on entering the platform was about 14 or 15 miles an hour. The driver tested the brake at the distant-signal as usual, and it acted properly. Both dials in my van were showing about 22 inches pretty regular all the way from London. Steam was shut off when we passed the distant-signal. I next felt the brake go on when my van was passing the crossing of the down slow line between south junction box and the south station box, very near the home-signals. I heard no whistling at all. After the collision the train was in

the position described by Mr. Benbow. It was a very fair train from London, but not crowded. Most of those injured were in the third class and the sleeping composite, the 4th and 5th vehicles from the engine. The horse-boxes were loaded. Neither the men nor the horses were hurt.

Thomas Benson Bell states: I have been in the service altogether for 35 years, and guard for 32 years. I am in the West Coast Joint service. On the 1st September I came on duty at Euston at 7 p.m. I was guard to the 8 p.m. down train, and was riding in the rear van. I have heard conductor Raynor's evidence and it is correct. I had no warning of the collision. I felt very little of it in my van. There was no rebound whatever. The time at which the collision happened was 11.35 by my watch. I did not think the speed at south junction higher than usual. I felt the brake go on at the distant-signal from south junction, and we pulled up a good bit. It was then released, and when it was applied again my van had passed the south junction box.

John Hodgkinson states: I have been over 29 years in the service, and a driver for over 23 years. On the 31st August I left duty at 3 p.m. I came on duty at 1.40 p.m. on the 1st September at Rugby. I took the 2.40 p.m. train to Euston and stood there till 8 p.m., when I was attached as pilot to the 8 p.m. down train due at Crewe at 11.35 p.m., where in ordinary case I would have booked off duty until morning. My engine, No. 1,480, is a six-wheeled engine, with 6-ft. 6-in. driving and trailing wheels coupled. The tender has six wheels. The engine is fitted with steam-brake, and the apparatus for working the continuous vacuum brake, automatic or simple. I was not connected up by brake pipe with the train engine. We were stopped by signal at Trent Valley junction, but there was nothing else unusual on the journey before arriving at Crewe. We passed Stafford at about 11.3 and ran at our usual speed to Crewe on the fast line, the signals being right for us all the way. The down distant-signal for the south junction at Crewe was off, and we passed it at a speed of about 20 or 25 miles an hour. Steam was shut off on my engine at Basford Wood down distant-signal—the usual place. The down home-signal for the fast line at south junction was off. Before arriving at that signal I saw the signal for the bay line, worked from the south station box, was off. I knew that that was the signal for the bay and not for the loop. We usually go up the loop line. I looked round to see if there was anything on the slow line, and to see whether the main signal was off, and then I applied my steam-brake. This brake was on before I got to the junction box. I opened my whistle directly afterwards. The speed at the junction box was quite 10 miles an hour. I do not think the speed was quite 20 miles an hour. I cannot say whether the driver of the train engine applied the continuous brake when I sounded my whistle north of the junction box, but after the collision he told me that he did not apply it until after I had whistled. He did not say where he applied it, or how long after I whistled. When we passed No. 2, the station box, the train began to pull up pretty fast. I then sanded the rails, and reversed the engine and opened the regulator. I cannot give an estimate of the speed when passing No. 2 box. I cannot say when the continuous brake was applied. If I had had the continuous brake at my command I could have put it on as soon as I saw that the signal off was that for the bay. I know the signals at Crewe very well and they are plain enough. The home-signals for the loop and bays, worked from the station box, can be seen as far as the south junction distant-signal, but the sight of them improves as you get nearer to the home-signals. I was looking more for the main signal that night, and did not notice the position of the south station box home-signals until approaching the south junction home-signals. It was a dark

night but clear. I cannot give any reliable estimate of the speed of the train when we struck the buffer-stop. I stepped off on to the platform about an engine length before we struck it, and did not stumble. I spoke to the driver of the train engine after the accident and he told me that he did not apply the continuous brake until after I had whistled, and that he had not noticed the signal until he got to it. I sounded directly I passed the junction box. I gave three or four "pops." My steam-brake was in good order and it works iron blocks on the four coupled engine wheels, and wooden blocks on the six tender wheels.

Joseph Hessian states: I have been 16 years in the service, and nearly 14 years a fireman. I was fireman to driver Hodgkinson on the 1st September. I agree with his evidence in the main, but I booked the time of passing Stafford at 11.5 a.m., and I estimate the speed at South junction distant-signal at 30 to 35 miles an hour. Our steam was shut off outside Basford Wood distant-signal, and I applied the tender brake before we got to Basford Wood and never released it. The place my driver popped for the brakes at Crewe was between the two signal-boxes, before we got to the home-signal for the bay. From my side I did not see the signal until we had passed the junction. I dropped off the engine on to the platform and was not hurt. I did not fall.

William Henry Vickers states: I have been nearly 19 years in the service, and a driver for 12 months. I had been an extra driver before that. I went off duty at 8 a.m. on the 1st September at Camden Town, after 11½ hours' duty. I am a Crewe man. I booked on at 7 p.m. on Sunday the 1st instant, and I was attached as train engine to the 8 p.m. down train from Euston. My engine, No. 2,187, is a six-wheeled engine with 6 ft. 6 ins. driving and trailing wheels coupled, and a six-wheeled tender. It was fitted with steam-brake and the apparatus for working the vacuum brake, automatic and simple. The whole train was fitted with the automatic brake, except the two horse-boxes, which had through pipes. The brakes worked all right at Willesden and Rugby, and at Trent Valley junction, Stafford, where the signals were against us. I think that we passed Stafford a minute before time by my watch. The signals were right all the way to Crewe, and we ran at our usual speed, arriving about right time. I shut off steam about Basford Wood distant-signal, the usual place. The pilot driver had shut off a little sooner. I applied the continuous brake slightly when passing Basford Wood home-signal, but seeing the signals all right I released it. I did not apply it again until I was coming round the curve approaching No. 2, the station south box at Crewe. I was close to No. 2 box when I applied it. The south junction home-signal for the loop and bays was off for us. I passed that signal at a speed of from 10 to 15 miles an hour. I was almost close to the station south box home-signals before I saw them, and then I saw that the lower arm was off for No. 1 bay, instead of the top arm for the loop. That was the first thing which called my attention to anything being wrong, as we ought to have run up the loop. I am well acquainted with Crewe, and there is nothing difficult about the signals to anyone who is accustomed to them. I do not know exactly how far the home-signals worked from the station south box can be seen, but I should think very likely from the south junction distant-signal. I attribute the fact of my not seeing them sooner on the night of the 1st September to the presence of the pilot engine in front of me. I was looking carefully myself for the south junction distant and home signals, and then when I went across to look for the station signals I was close on them. I never dreamt of being turned into the bay at all. Just as I was putting my brake "hard on" the leading driver "popped" two or three times. He must have been under or close to the signals by that time. The speed at that point

was between 10 and 14 miles an hour. I had all my brake power in use at once, and I sanded the rails. I got my engine half reversed. The rails were very greasy at that place. If I had been turned up the proper line I should have stopped under the bridge. The speed when we struck the buffer-stop was about seven or eight miles an hour. I remained on the engine and so did my fireman. We were neither of us hurt.

Elijah Hollins states: I have been 10 years and eight months in the service, and four years and two months a fireman. On the 1st September I was fireman to driver Vickers. My driver's evidence is

correct. I put my tender brake on by hand as soon as I saw the wrong signal was off for us.

William Willis states: I have been six years in the service as porter. I am now foreman at Crewe. On the 1st September I was on night duty from 11 p.m. to 2 a.m. I was doing duty of assistant inspector, and took charge of the up side. I did the booking of up trains. The 8.5 up train from Holyhead arrived at right time, 11.34, and I booked it so. I was on the up platform when the collision took place. I think it was about 11.33, but I did not look at the clock. The Holyhead train had not then arrived.

Conclusion.

The following are the circumstances under which this collision occurred, as narrated in the evidence given above:—

Between 11.24 and 11.27 p.m. the signalman in the Crewe south junction (or No. 1) cabin gave to Crewe south station (or No. 2) cabin the "Be ready" block signal for a down express train for the loop or bay lines, which signal the latter signalman at once accepted, taking off at the same time the disc worked by him in No. 1 cabin.

The south junction down fast line signals for a train running to the loop or bays were then lowered, and the south station cabin signalman set the points and lowered the proper signal for No. 1 bay, thinking that the approaching train was the 10.15 p.m. train from Birmingham, due to arrive at 11.31 p.m., which has to connect with the 8 p.m. down train from London, due to arrive at 11.35 p.m., and which always runs into No. 1 bay.

The train had been signalled to No. 1 cabin from Basford Wood signal-cabin on the down fast line, but the block signal to No. 2 cabin gave no indication as to the line upon which the train was running, and, as appears from the evidence, it is not the custom for the signalman in No. 2 cabin to be informed which train is coming, unless the London train is running out of course, ahead of the Birmingham train, in which case it is the duty of the signalman in No. 1 cabin to let him know by telephone.

The former signalman, however, some minutes after he had lowered the signal for the bay line, saw, by the back lights of the south junction signals, that the signal lowered was that for the fast line, and, as the Birmingham train usually, although not invariably, runs in upon the slow line, he became anxious, and asked the signalman in No. 1 cabin by telephone whether he was sure that it was the Birmingham train. There is no record of the exact reply given, and there is a little difference between the two signalmen on this point, No. 2 signalman saying that the reply he got was, "That it should be the Birmingham train," while No. 1 signalman says that he thinks that he replied that he did not know, as he had had no information. Almost immediately afterwards, upon the train passing his cabin, he saw that it was the London train, and telephoned the information to No. 2 cabin; too late, however, for the signalman there to reverse his points, or to throw up his signal, until the engines had passed it, although he whistled to attract the attention of the drivers as they passed his cabin.

The train passed No. 2 cabin at a speed, probably, of about 25 miles an hour, entered the bay, and came into collision with the buffer-stop, which is about 107 yards south of the point where the leading engine of the train should have stopped if it had been upon its proper line—the loop line,—the speed at the time of the collision being, probably, between 8 and 10 miles an hour.

There were two engines on the train, both fitted with the steam-brake, working blocks on the four coupled engine wheels and the six tender wheels, and also with the apparatus for working the automatic vacuum brake, with which all the 15 vehicles comprising the train were fitted, with the exception of the two leading vehicles, which had through pipes. Owing, however, to the absence of a front pipe on the train engine, the driver of the leading engine had no control over the continuous brake.

Steam had been shut off upon both the engines at the usual place, about two miles from Crewe, and the front driver states that he saw that the signal off was that for the bay line before arriving at the south junction down home-signals (670 yards south of the point of collision), that he then applied his steam-brake, which was on before he passed No. 1 cabin (483 yards south of the point of collision), and opened his whistle immediately afterwards.

The driver of the train engine had applied the continuous brake slightly when passing Basford Wood signals, but had released it again upon seeing the south junction

signals all right for him, and he admits that he did not see the south station signals (326 yards from the point of collision) until he was close to them, and states that he applied the continuous brake when close to No. 2 cabin (230 yards from the point of collision). He says that the driver of the leading engine sounded his whistle close to the south station signals, and after he had gone to his brake to apply it, and this evidence agrees better than that of the leading driver with the evidence of the signalman in No. 2 cabin, who says that the leading engine had passed his cabin before there was any whistle, and before the brakes were applied.

The evidence of the conductor and guard supports that of the signalman, and I have no doubt that the engines were at or near No. 2 cabin before the brakes were in operation.

Even then there were about 230 yards in which to pull the train up, and it is perfectly clear that, if the speed of the train had not been higher than it should have been, *i.e.*, such a speed that it could have been stopped at the proper place, only 107 yards further north than the buffer-stops, by the use of the hand-brakes only (*see* Rule in Appendix), the collision might have been averted by the use of the continuous brake upon the emergency arising.

It thus appears that the collision, which fortunately did not cause any fatal injuries, was due—

1st. To the points having been set for the bay line to receive the Birmingham train, instead of for the loop line to receive the London train.

2nd. To the signal for the loop line having been passed at danger by a train, the drivers of which knew that they ought to run up the loop.

3rd. To the speed of the train having been higher than it should have been when entering Crewe, which, in this respect, is treated as a terminal station.

In regard to the setting of the points for the bay line I do not think that any blame can be attached to the signalmen. The man in No. 2 cabin was clearly not responsible, for, according to the practice, he had a right to assume that the train for which he received the "Be ready" signal was the Birmingham train, as he had received no intimation to the contrary, and he went out of his way to inquire if it was the Birmingham train when he saw that it was the fast line signal which had been lowered. Upon week days the signalman in No. 1 cabin would have learnt by telegram from Stafford that the trains were running out of course, and it would then have been his duty to inform the other signalman that such was the case, but upon Sundays there is no telegraphing between Stafford and No. 1 cabin, the signalman in this cabin being dependent upon the inspector on duty on the platform for all information as to the running of trains, and being, according to practice, justified in thinking that they are running in proper order unless he has been told the contrary.

Upon this Sunday night it appears from the record kept in the telegraph office on the up platform that at about 11.9 a telegram was received from Stafford that the London train had passed at right time and in advance of the Birmingham train, and one at about 11.25 that the Birmingham train had left at 11.16. This information did not reach the inspector until shortly before the collision took place, but it is not easy to decide exactly when it did reach him.

There was a porter told off as "train reporter," whose duty it certainly was to go to the telegraph office to ascertain how the trains were running, and to chalk up the times upon a board on the down platform, and whose duty it also was, according to the inspector, although not according to the idea of the man himself, to communicate to the inspector the information he had gathered.

This man went to the telegraph office soon after 11 p.m., but at that time no information had been received, and he did not go back again until about 11.25 or 11.26, being, he says, occupied in other duties. He then went to the inspector's office, in order, he says, to find out if the London train was to be kept waiting for the Birmingham train, and he gives the time at which he went as 11.27 or 11.28, and states that he remained some two minutes in the inspector's office.

The inspector states that the train reporter came to his office at 11.29, and told him how the trains were running; that he himself left the office at 11.30, in order to telephone to the south station cabin from the instrument on the up platform, as he thought it was too late to telephone from the office to the south junction cabin, and that when he got on to the platform the London train was just passing the latter cabin. He did not look at the clock to see the exact time of the collision, which took place as he was crossing the line to the down platform, but he is certain that it was at about 11.33 or 11.34, one or two minutes before the train was due, and he thought, from the

fact of the train being before time, that a mistake had been made in the telegraph from Stafford, and that it was the Birmingham train which was coming in first.

The manner of keeping signalmen informed as to the running of trains now in force at Crewe seems to me to be most unsatisfactory, and I attribute the accident in a great measure to this cause. Instead of a negative system, under which the south station signalman is only informed when trains are running out of course, both he (and the signalman in the south junction cabin upon Sundays) should receive positive information in every case, and the south station signalman should also always be informed by the block signal used whether the train which is approaching is running upon the fast or the slow line, which might easily be done.

Beyond the slovenly system of signalling trains, the responsibility for this collision must be shared between the drivers, who omitted to notice that the wrong signal was off for them, although it was visible for at least 1,200 yards, and who approached Crewe at a higher speed than they were entitled to according to the rules; the inspector on duty, who apparently did not attach sufficient importance to the necessity of keeping the signalmen informed as to the running of trains, and who might, if he had telephoned to the south junction cabin immediately the train reporter came to his office, have averted the collision; and (to some extent) the train reporter whose principal, if not only, duty it was to ascertain how the trains were running, and who should not have allowed so long a time to elapse between his two visits to the telegraph office.

Of the two drivers the leading one had the best opportunity of seeing the signals, although both are held responsible, and I do not consider that this man gave his evidence in as straightforward a manner as the driver of the train engine.

In judging the conduct of these two men it must, however, be remembered that there are a large number of signals on entering Crewe, that they had received a clear signal from the south junction cabin, that there is no distant-signal worked from the south station cabin, and that they had every reason to suppose that, as usual, they would find the road right for them to run up the loop. This collision shows how very necessary it is for drivers to be always on the alert in their look-out for signals, and never to take anything for granted.

I would recommend the Company to lose no time in issuing such an order as will ensure that the signalmen should always receive as much information as possible regarding the running of trains, and I would also advise the addition of down distant-signals from the south station cabin for trains running on to the loop line (but not to the bays) from both fast and slow lines; and the fitting of front brake pipes on all their engines, as had been done on many other lines, so that the leading driver, who is in the best position for seeing signals, may have the power of applying the continuous brake.

Judging from the evidence of the inspector, it would also seem that drivers are not called to account for failing to pay proper attention to the rule limiting the speed on entering this station, and it is hardly necessary to point out that steps should be taken to stop such a dangerous practice.

At the time of the collision the inspector had been on duty for about 5½ hours, the train reporter for the same period, the leading driver for about 10 hours, out of which period he was standing at Euston for about 1½ hours, and the train driver for about 4½ hours.

The Assistant Secretary,
Railway Department, Board of Trade.

I have, &c.,
F. A. MARINDIN,
Major, R.E.

APPENDIX.

DAMAGES TO ROLLING STOCK, &c.

Engine 1480.—Buffer-plank broken and hopper damaged.

Parcel van.—1 buffer-rod bent.

L. & N.W. sleeping composite.—One end smashed in, headstock broken, four buffer-rods bent, footboard damaged.

West Coast, third class.—One end smashed in, one side panel damaged, four buffer-rods bent, four buffer castings broken.

West Coast brake-van.—Headstock broken, all buffer-rods bent.

L. & N.W. sleeping saloon.—Three buffer-rods bent, three buffer castings broken.

L. & N.W. composite.—Two buffer-rods bent, one buffer casting broken.

Stop-blocks.—Woodwork destroyed.

Platform.—Damaged.

GENERAL INSTRUCTIONS.

Speed of Trains approaching under-mentioned Stations.

Stafford—Trent Valley Junction and Shropshire Union Junction.

Crewe—South Junction and North Junction.

Wigan.

Springs Branch.

St. Helens.

Drivers of all trains and engines approaching any of these junctions are reminded of the necessity for regulating their speed so as to be able to stop at the home-signals and clear of the points and crossings if the signals are at "danger." (See Rule 284.)

Rule 293 of General Rule Book.

The last clause of Rule 293 has been altered to read as follows:—

"Engine-drivers must satisfy themselves that the continuous brake is in proper working order before

starting—at each station where the engine is changed; and again at each station where any vehicle is attached or detached. It must also be tested before passing the distant-signal of any terminus or other principal station at which the train has to stop, and the speed of the train must be reduced by it, and engine-drivers must always enter these stations at such a speed as to enable them to stop the train at the proper place by the application of the ordinary hand-brakes, and guards must watch the speed of trains and assist the engine-drivers by the use of their hand-brakes.

"Unless the continuous brake is working properly when thus tried, the engine-driver must whistle for the guard's hand-brake, and inform the guard as early as practicable that the continuous brake is out of order, and the hand-brake must be relied upon for working the train. Special care must then be taken in approaching stations at which the train has to stop."

N.D.—No. 27.

LONDON AND NORTH-WESTERN RAILWAY.

District Superintendent's Office, Lime Street Station,
Liverpool, September 1884.

CREWE.

Instructions to Signalmen at South Junction and No. 2 (South End of Station) Box for Working the Down Goods Lines, Down Bay Lines, Down Loop Line, and Up Goods Line.

ON NO. 2 GONG.

ELECTRIC CODE.

	No. of Strokes.	
Acknowledgment	1	
Vehicle drawn by horse	2	
Main line express passenger train to down loop	4	
Main line ordinary passenger train to down loop or bays	4 000—0	
N. S. line passenger train to down loop or bays	5 0—00—000	
Salop line L. & N. W. passenger train to down loop or bays	5 00—00—0	
Salop line G. W. passenger train to down loop or bays	6 000—000	
Train from down bays to go in up bays	† 4 0—00—0	
Express goods on down passenger loop or down fast goods line or up goods line	5 0—0000	} South junction to give an indication on the telephone when the train is to go on down passenger loop.
Fast goods on down passenger loop or down fast goods line or up goods line	5 0000—0	
Ordinary goods on down passenger loop or down fast goods line or up good line	3	
Light engine for down loop	4 00—00	
Goods train down goods yard on slow line	6 00—00—000	
Light engine or engine and break for goods yard	5 00—000	
Signal given in error	* 8	
Train waiting, take off slot	7 000—0000	
Blocking back signal	† 8 00—000—000 (see footnote).	
Obstruction removed	6 0000—00	
May train or engine set back from south junction to down loop or down bays?	† 6 00—0—000	

For general Codes, see Block Telegraph regulations.

Signals marked (*) to be repeated to show they are understood.

Signals marked (†) to be repeated back if permission can be given for the train or engine to set back.

† BLOCKING BACK SIGNAL.—Should it be necessary to set back a train or engine in the wrong direction, the specified signal must be sent to the box in rear, and no train or engine must be allowed to set back until the proper reply giving permission (8 strokes, thus: 2—3—3) has been received. After having

given permission in this manner for the line to be blocked, the signalman in rear must not allow any train or engine to enter the blocked section until he has himself cleared the line, or received the proper signal, to denote that the obstruction has been removed, and the train has been signalled in the usual way.

JAMES SHAW,
District Superintendent.

Permission for trains or engines to approach will be given by the box in advance ringing one stroke, and in addition turning up the disc to indicate "line clear."

If the disc is not turned up to "line clear" by the box in advance, the approaching train must be brought *to a stand*, but, providing one stroke in acknowledgment has been received, signifying that the line is clear up to the home-signals, for the cabin giving the signal, the driver, *after being stopped*, may be allowed to proceed cautiously towards the next box, the proper signal being lowered, and a green flag or hand lamp shown to the driver.

The signalman at the box in advance must not give one stroke in acknowledgment unless the line is clear up to the home-signal.

No reply will signify that the line is blocked, and the train or engine must not be allowed to proceed.

No. 2 will turn up the disc in south junction cabin if the indicator of the tell-tale instrument from north junction shows "line clear," and there is nothing in the loop.

The signalman at No. 2 box must not lower his up goods yard stop signal until he has obtained permission from the south junction for the train to approach.

Printed copies of the above report were sent to the Company on the 10th October.

LONDON AND NORTH-WESTERN RAILWAY.

Board of Trade, (Railway Department),
1, Whitehall, London, S.W.,
26th October 1889.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 5th instant, the result of my inquiry into the circumstances attending the very serious collision which occurred on the 4th instant near Longsight station, on the Manchester and Stockport line of the London and North-Western Railway.

In this case the 7 p.m. up local passenger train from London Road station, Manchester for Stockport, while approaching Longsight No. 4 (or Hyde Road) signal-cabin, about $1\frac{1}{4}$ miles from Manchester, came into violent collision with two engines and a brake-van which were standing on the up fast line, along which the passenger train was running.

The result of the collision was most disastrous. One passenger was killed on the spot, and five others (one a Company's servant travelling as a passenger) died from the effects of injuries received. Complaints of injuries have been sent in from 37 other passengers, and of these, in seven cases, the injuries are of a serious character.

The driver of the passenger train was shaken and bruised.

The passenger train consisted of an eight-wheeled tank engine, with the six front wheels coupled, running coal bunk first, and seven vehicles, viz., a third-class carriage, a brake-van, two composite carriages, a third-class carriage, a composite carriage, and a composite carriage with a brake compartment, the brake power being derived from a hand-brake for the six coupled wheels of the engine, of the simple vacuum brake applying to four wheels of each vehicle, and of a hand-brake in the front van and in the brake compartment of the rear vehicle.

Of the two engines and brake-van, the engine next Manchester was a tank engine, chimney in front, and the other was a tender engine attached to the tank engine, with the tender in front.

A list of the damage to rolling stock is given in an appendix. No wheels were knocked off the rails. In the permanent way two crossing chairs were broken, and several rails were bent.

Description.

This collision occurred on the up fast line about 50 yards on the Manchester side of Longsight No. 4, or Hyde Road signal-cabin, in the immediate neighbourhood of which there are six running lines of rails, viz., an up and down fast line in the centre, an up slow and up loop line to the east of the up fast line, and a down slow and down loop line to the west of the down fast line. A short distance on the Stockport side of the cabin there are sidings and excursion lines joining the up loop, down loop, and down slow lines. A crossing worked by two levers (Nos. 41 and 42) gives access between the up fast and down loop lines, a continuation of part of the same crossing giving access between the up slow and down loop lines by pulling No. 40 lever instead of No. 41. There is not, nor has there ever been, any means of direct access between the up fast and down fast lines at this crossing. To have made this possible it would have been necessary to lay in another slip-road between the crossing and the down fast line, worked by an additional lever, and still requiring No. 41 lever to be pulled.

The crossings and other connections are properly protected by signals, those referring to the up fast line being an up home-signal (No. 59), about 35 yards north of No. 41 points, and two up distant-signals, 1,114 and 549 yards from the up home-signal.

Underneath No. 59 up fast line home-signal there are two distant-signals worked from Longsight (station) cabin No. 1. These are both controlled by No. 59 signal, the right-hand one referring to the up fast line, and the left-hand one to the crossing from the up fast line to the up slow line, the latter being the one required by the 7 p.m. up passenger train.

Absolute block telegraph working is in force on the up and down fast and slow lines, the next adjacent posts to Longsight No. 4 being, towards Manchester, Ardwick junction, 945 yards distant, and on the Stockport side Longsight No. 1.

The lines are straight for some distance on the Manchester side of Longsight No. 4 cabin, and are practically level.

The collision occurred about five yards on the Stockport side of No. 41 points, or about 40 yards inside the home-signal for the up fast line. No. 41 points are 54 yards north of the centre of Longsight cabin No. 4, which is on the east side of the lines, and is separated from the up fast line by the up slow and up loop lines. It contains 59 working levers, 10 block telegraph instruments, and seven bells.

The weight of the passenger train (inclusive of passengers) amounted to about 157 tons, of which weight the continuous brake (only on the vehicles) applied to about 63 tons. The hand-brake on the engine was fitted to the six coupled wheels, on which the weight was about $33\frac{1}{2}$ tons out of a total weight of 43 tons.

Evidence.

1. *William Sheldon*, driver; 14½ years' service, driver about two years.—I know the line well between Manchester and Stockport. I came on duty on the 4th instant at 7.0 a.m. to continue till about 8.0 p.m., having had a rest day on the 3rd instant. I was engaged all day shunting in the down sidings at Longsight till 6.40 p.m., my engine being No. 2,325, a tank engine with six coupled wheels, fitted with only a hand-brake. At 6.40 p.m. the traffic foreman told me I was to go away unattached to Philips Park Branch via Ardwick, but before doing this I had to take water on No. 4 siding; when I had done this and oiled my engine I told the signalman in No. 3 Longsight that I was ready to start. After waiting a short time the signal was pulled off for me to go on to the down loop as far as the signal (No. 28) opposite No. 4 cabin. I was running with my chimney towards Manchester, and fireman Rogers was with me on the footplate, and no one else. I think I remained standing at No. 28 signal about five minutes. During these five minutes I went across to No. 4 cabin and told signalman Swift from the ground that I wanted to go right away on the Ardwick Branch. He replied "I will let you go when there is an opportunity." I then went back to my engine and soon after No. 28 signal was pulled off and Swift shouted to me to draw down cautiously to the tail of the Wigan coal train which was standing in the down loop. I did so. I then followed the Wigan coal train a short distance down the loop so as to give room for another engine and van to enter the loop through the crossing, from the up side of the line. I remained a few minutes before the engine and van came across and coupled on to me in the down loop, the tender of the engine being coupled on to the bunker end of my engine, and the van being at the Stockport end of both engines. I then looked towards No. 4 box and saw the signalman giving us a white hand-lamp signal to come back. I was quite unaware of what the signalman meant to do with us, but simply obeyed his signal and came across through the crossing. As soon as I found we were turned on to the up fast line I stopped without hand-signal from the signalman as soon as I could, on feeling my engine turned through No. 40 points, which I knew from their position led on to the up fast line. My engine came to a stand on the up fast line close to the Stockport end of No. 41 points. I then looked towards the signal-box and saw the signalman giving

us a white hand-lamp signal to go ahead. I knew I was on the up fast line, and on looking over the side of the engine I saw the points right for the up fast line. I knew if I went ahead I should go down the up fast line and so I remained stationary, but I shouted to the signalman "We are on the wrong road." I do not think he heard me. I then looked down the up fast line, and I saw an up train approaching towards us, about 50 yards from us; it was a little hazy at the time, but I do not think I should under any circumstances have seen the train sooner than I did. On seeing the train I looked up at the signals and saw by the back lights that the up fast home-signal and the up distant-signal from the fast to the slow line, worked from Longsight No. 1, were off. I at once put steam full on, the engine being still in backward gear, which I had not altered after coming across; just after opening the regulator I gave the alarm whistle and left the whistle open, then seeing the up train close on us, and that I could not get out of the way, I shut the regulator after the engines and van had gone back about six yards and jumped to the left into the 4-ft. space of the down fast line and had just reached the ballast when the collision occurred. I escaped without injury. I returned at once to my engine and found it with the leading wheels at the Manchester end on the rails, but the trailing wheels lifted up about a foot and with the buffers in the tank of the other engine, the front of my engine being a short distance on the Stockport side of the Stockport end of the signal-cabin. The engine of the passenger train was close up to my engine after the collision. I had no conversation with the signalman immediately after the collision. Some time since, perhaps about 10 months ago, I had been turned from the down loop on to the down slow line in order to go to the Philips Park Branch, but on other occasions I have always gone along the down loop. I had never before been called on to the up fast line when on my way to the Philips Park Branch. I heard no whistling from the engine of the passenger train as it approached. I did not notice any trains pass on either of the three other lines while I was standing on the up fast line, where I do not think I was standing more than two minutes. I did not hear the noise of the up home and up distant signals dropping when they were taken off. The light on the front of my engine was a red one at the foot of the funnel, and this had not been altered

from the time I left the down sidings till the time of the collision. Not having received a proper right-away signal and not having started on my down journey it was not right for me to show a white or green light.

2. *John Rogers*, fireman; 3 $\frac{3}{4}$ years' service, seven months fireman.—I am Sheldon's regular fireman, and I was with him on the 4th October, having coming on duty at 7 a.m., to go off about 9.45 p.m., having had a rest-day the day before. I agree generally with the driver's evidence, which has been read over to me. On arriving on the up fast line the release of the engine brakes allowed the engines to rebound, and the leading wheels of my engine passed, I think, to the Manchester side of No. 41 points, so that the signalman could hardly have moved them. I had just looked over at the points, and on raising my head I saw the back lights of the up fast home, and, I think, of the distant-signal below it showing white, and denoting that these signals had been lowered; and on seeing these back lights I realised, for the first time, that we were on the up fast line. I at once shouted to the driver, "Mate, look at those signals, we are on the wrong road." The driver then shouted to the signalman and put on steam, the engine being still in backward gear. Immediately after seeing the signals off I saw the passenger train coming on the bridge; on giving the engine steam it moved backwards. I jumped off on the right side about the same time as the driver, after the engine had moved back a few yards. I tumbled down in the 6-ft. space and bruised my leg, but I managed to keep ahead of my engine, and I heard the collision occur behind me when I was about opposite the tender engine. On seeing the other train my driver opened his whistle and kept it open. I do not know whether he closed the regulator before he jumped. I cannot say whether Sheldon or I was the first to realise that we were on the wrong road.

3. *Edwin Clarke*, driver; 12 years' service, 18 months driver.—I booked on duty on the 4th October at Longsight at 9.20 a.m. to sign off about 9.45 p.m., having being 11 $\frac{1}{2}$ hours off duty the previous day. I had been engaged all day in working goods trains between Longsight and Philips Park. About 6.55 p.m. I got a signal to cross from No. 1 up sidings to the down loop on my way to Philips Park for some London waggons. As I passed No. 4 cabin the signalman gave me a green hand-light and told me to join on to the down-sidings pilot engine, which was in the down loop, and then, that we were to go together on the down fast line to Ardwick. My engine was a tender engine, running tender towards Manchester, and there was a brake-van attached to the chimney end of the engine. The only brake power on the engine and tender was the tender hand-brake. I then went across into the down loop, taking the van past the points, and the guard hooked my tender on to the bunker end of the pilot engine. Directly we were coupled together the signalman gave a white light, and on our moving in obedience to it I found that I was returning through the crossing along which I had just passed. I saw at once that this was not in accordance with what the signalman had just told me, as I knew that I could not get from this crossing on to the down fast line. Instead of going right across to the up side of the lines I found that we were turned on to the up fast line, and in consequence we stopped when both engines were through the crossing. I at once shouted to the signalman, "We are on the wrong road," and he immediately said, "Right away, fast line"—waving a light to go towards Manchester. I refused to move, and shouted again "We are on the wrong road." He said nothing in reply to this. I still remained stationary, and on looking towards Manchester saw the up fast home-signal and the distant-signal from the fast to the slow line, worked from Longsight No. 1 cabin, lowered, as I knew by the back lights. On

seeing this I got on the top of the sand-box and saw a train approaching on the up fast line, 30 or 40 yards off. I shouted to the signalman, "Put the signal on," but I doubt if he heard me. Previously to shouting I had put my engine into forward gear, and had opened my regulator and shut it again, and the engines had got into slow motion towards Stockport, when seeing the other train close upon us I jumped off towards the down slow line, the fireman following me. I kept my feet, and was not hurt. The collision occurred four or five yards from where I jumped; after the collision the pilot engine was about opposite the Stockport end of the signal-box. Neither engine nor tender nor the van was off the rails, but the end of the pilot engine had run into my tender. Soon after the collision I said to the signalman, "Whatever have you been doing," but he made no answer. I thought, at first, when coming back through the crossing that we were going back into the up sidings. The evening was a little hazy. The collision occurred with a great crash. I can form no idea of the speed of the passenger train, that of my engine was not more than a mile an hour. I did not open my whistle, the pilot engine-driver having begun to whistle when I was on the sand-box. This whistle was left open till the collision. The brakesman had said before we started from the down loop, "Right ahead," but I was obeying the signalman's hand-signal.

4. *Alfred Garlick*, fireman; 4 $\frac{1}{2}$ years' service, 1 $\frac{1}{2}$ years fireman.—I work regularly with Clarke, and I was with him on the 4th October. I agree with his evidence, except that I did not hear him say to the signalman a second time, "We are on the wrong road," nor did I hear the signalman say to the driver, "Right away, fast line."

5. *William Berry*, brakesman; 10 years' service, brakesman four or five years.—I commenced work on October 4th, at 9.45 a.m., to remain on duty till 9.45 p.m. I was working with Clarke's engine all day, and went across from the up siding to the down loop at 7.2 p.m. As we were crossing the signalman said, "Hook on to the other engine," but I did not hear anything more; on reaching the down loop I coupled the engines together with the coupling at the back of Sheldon's engine. My van had passed completely inside the crossing points; seeing the signalman wave a white light I said to Clarke, he is giving us a signal to come back, thinking that the signalman meant us to go back along the down loop and cross to the down slow line. We at once moved back, and being in the van I did not observe we had come back through the crossing till after we had stopped. I then heard the signalman say, "Right away, fast line." I next heard one of the men on the engine shout, "We are on the wrong road," or "We are going on the wrong side." I cannot say which; the signalman made no further remark. I had not realised that we had not gone the way I had expected till I heard the shout from one of the men on the engine. I was then coming out of the body of the brake on to the end next Stockport when I heard either my driver or fireman shout from the ground on the left-hand side going towards Manchester, "Look up," and immediately the collision occurred while I was in the doorway. The collision was violent, and I was knocked down and hurt, but not so seriously as to have to go off duty. The van was moving slowly towards Longsight when the collision occurred and it stopped soon after; all its wheels were on the rails and it was not damaged. I heard an engine whistling and the shout "Look up" at the same time. About half-an-hour after the collision I went into No. 4 cabin; Swift was still there and said, "What do you want here," I said I wanted to look at the book to look for the other signalman's address so that I might go and call him, as I had been instructed to do, but I did not speak to him about the accident, nor he to me. He had not the least appearance of drink, but appeared upset. The weather was clear, but the

night was dark. I have worked this train for about 12 months, and have never before been turned from the down loop on to the up fast line, but generally along the down loop or the down slow line, and perhaps once a week along the down fast line. I make this trip about four times a day. I know that Swift is a teetotaler, and I have never seen him the worse for liquor during the three years I have known him, and there was nothing in his mode of signalling on the evening of the collision to lead me to think he was otherwise than sober.

6. *Joseph Burgess*, driver; 16 years' service, four years driver.—I signed on duty at 6 p.m. on October 4th to remain on till 8.10 a.m. on the morning of the 5th, having had a rest-day on the 3rd after mid-day. After getting my engine ready at the Longsight shed I went to London Road about 6.40 p.m. to take the 7 p.m. train to Stockport. My engine was No. 2,362, an eight-wheeled side tank engine, the six front wheels being coupled and the trailing wheels having radial axle-boxes. The cylinders are, inside, 17" by 24". The engine was running coal bunk first, and the train consisted of seven vehicles, three of them having six wheels, and the other four eight wheels. The simple vacuum-brake was fitted to all the vehicles composing the train, four wheels of each having brake-blocks. The brake on the engine was only the hand-brake, which applied to the six coupled wheels. There is a turntable at Longsight, but it is always customary to run this train with the engine bunker first from Manchester, as it is then ready to run chimney first with a goods train from Stockport to Diggle (the next work the engine has to do) without turning it at Stockport. We left Manchester at right time, fireman Brocklehurst being alone with me on the footplate, guard Haystead being the only guard in the rear brake-van. After leaving Manchester we were slackened by signals at Ardwick, where the distant-signal was against me; but the home-signal for the up fast road was taken off before I reached it, when the speed was about 10 miles an hour; the two distant-signals from Hyde Road, one under the Ardwick home and the other under Ardwick advanced starting signal, were at danger; but the home-signal for the up fast line was off when I first came in sight of it, about 150 yards off, I had not seen it further because the night was misty; at the same time I saw this home-signal off I also saw the distant-signal for the fast to the slow line, worked from Longsight No. 1, also off, this latter being the signal I wanted. My speed at this time was from 10 to 15 miles an hour, I being prepared to stop at the Longsight No. 4 home-signal had it been at danger, but finding it off I gave the engine steam (which I had shut off before reaching the Hyde Road distant-signal under the Ardwick starting-signal), and had increased my speed to about 20 miles an hour when I caught sight of an engine with a red light at the bottom of the chimney, the distance from it being about 50 yards. I at once realised that it was on the up fast line, and I at once shut off steam, applied the vacuum-brake, and called to the fireman to apply his brake. I had no time either to reverse the engine or to open the sand-valves, as I was holding the brake handle all the time. The speed was, I think, reduced from 20 to 10 or 15 miles an hour on collision. I did not whistle, but I heard the engine I ran into whistle at the same time that I saw the engine. I could not say whether the engines were in motion when I struck them. Neither I nor the fireman jumped off. I was shaken and bruised, and am off duty in consequence. My engine did not leave the rails, but the second coach came on to the top of my buffer-plank. I could not say how far my engine ran after the collision, which took place on the Stockport side of the home-signals. I had tested the vacuum-brake at London Road, and it was then in good order, and I applied it at Ardwick and found it acting well; the gauge does not show the number of inches of vacuum obtained.

7. *Thomas G. Brocklehurst*, fireman; 9½ years' service, five years fireman.—I am Burgess's regular fireman, and I was with him on October 4th, having come on duty at 6 p.m. to remain till about 8 a.m. on the 5th. We went from Longsight sheds to London Road, where we arrived about 6.45 p.m., and were attached to the 7 o'clock p.m. train at London Road, which train consisted of seven vehicles. The only brake for the engine was a screw-brake, applying to the six coupled wheels. The vacuum-brake was tested before leaving London Road, and was in good order. After leaving London Road we were slackened by the Ardwick signals; the vacuum-brake was then used for reducing speed, and worked properly. The Ardwick home-signal was taken off before we reached it, but the two Hyde Road distant-signals were both at danger. Speed was reduced in consequence to about 15 miles an hour, when I caught sight of the Longsight No. 1 distant-signal clear when about 400 yards from it. The driver had put on steam a second or two before this, and on coming in sight of the home-signal, about 300 yards from it, it was also off. Just on coming on to the Manchester end of Hyde Road bridge, Burgess shouted, "Mind your brake; we are into something," or words to that effect. I turned round to the brake-handle, but before I was able to turn it the collision occurred. Burgess had shut off steam and applied the vacuum-brake when he shouted to me, the speed having been then 20 to 25 miles an hour, and it was reduced to about 15 miles an hour on collision. I remained on the engine and was not hurt, only shaken, and have not had to leave duty. There was some mist about, which prevented the other engine being sooner seen. The engine had a red light in front of it, which I saw before the collision. I could not say whether the engines were stationary or in motion when we struck them. Our coal-bunker was not damaged.

8. *William Haystead*, guard; 15 years' service, six years guard.—I came on duty at 5 p.m. on the 4th to remain till 12.30 a.m. on the 5th. I first took a train from London Road to Stockport and back, and then became guard of the 7 p.m. train from London Road, also for Stockport. We started punctually at 7 p.m., the train consisting of a third-class carriage, brake-van, two composites, third-class carriage, composite, and brake composite, seven in all. I was alone in the brake compartment of the rear brake composite. The train was well filled, except there was no one in the front compartment of the first vehicle, which was locked up, as is always the case, except in times of great pressure. The brake was tried before leaving London Road, and the automatic action in the van was in proper working order, 18 inches of vacuum having been obtained. After starting we were slackened at the Ardwick signals, but the home-signal was taken off before we reached it. I was not aware that any other signals were against us, nor had I noticed any diminution of speed before the collision took place, while I was picking up a parcel, and was taken quite unawares by it. I felt no application of the brake before the collision, and I heard no brake whistling. I was knocked down, but not much hurt. The collision occurred about 7.4 p.m. The principal injuries were received in the three rear compartments of the first carriage, which compartments were crushed together, and I believe all the deaths occurred from injuries received in these three compartments. I had no conversation with the signalman after the collision. I could not state the speed of my train when the collision occurred.

9. *James Swift*, signalman; 11 years' service, four years signalman.—I first served as signalman at Ashbridge, Heaton Norris, for 3½ years, and I was then transferred, on promotion, to Hyde Road, i.e., No. 4, Longsight, seven months since. I came on duty there on October 4th, at 2 p.m., for an eight hours shift. I had a learner, James Woolrich, in the cabir with me from 2 p.m. till after the collision. He had

been in the cabin about three weeks, and was learning both the block telegraph and the working of the levers. He had got a pretty fair knowledge of his duties, and would have been qualified to act as signalman in about another week. There are 59 working levers in the cabin, and 10 block instruments and seven bells. I work absolute block on the up and down fast and slow lines between Ardwick and Longsight No. 1, and permissive block on the up and down goods loops. About 7 p.m. I lowered No. 28 signal to permit a pilot engine to proceed along the down loop, telling the driver to go cautiously down to the Wigan coal train, which was standing on the down loop. I knew that the engine wanted to go to the Ardwick Branch, but before sending it on I wished to couple on to it an engine and van in No. 1 up sidings, which were also going in the same direction as the pilot engine. At 7.2 or 3 I allowed this engine and van to cross from the up siding to the down loop, pulling over points Nos. 38, 40, and 42, and taking off disc-signal D. As the engine and van were crossing I told the driver to couple on to the pilot engine in the down loop, and then to come out on the fast line, not saying either up or down, and I would give them a hand-signal. The engine and van went across, and were coupled on to the pilot engine; after they had passed across I put back Nos. 38 and 40 points, but still left No. 42 standing open for the crossing. When the engines were ready to come back I pulled over No. 41 points, which made the crossing from the down loop to the up fast line, and then gave a white hand-lamp signal for the engines to come across. At the moment I was under the impression that I could then turn them from the up to the down fast line. I had thought this would be a quicker method than by sending them through Nos. 49 and 48 points, and then along the down slow line and back through No. 32 on to the down fast line. I was unwilling to send the engines along the down slow line, as I was aware by telephone that a goods train was to be let out of the down loop, and consequently Ardwick would not have accepted a "Be ready" signal for them to proceed along the down slow line, though he would if they were to proceed along the down fast line. When the engines had reached the up fast line I restored No. 41 lever to its normal position. As the engines were coming across I offered the "Be ready" on the down fast line to Ardwick. The signal was accepted, and I gave the "Train entering section" signal immediately, and then as soon as the engines were across and I had put back No. 41 points, I gave the engines a hand-signal to start. My impression at the moment was that by putting back No. 41 lever I should enable the engines to cross from the up to the down fast line. After giving the engines the signal to start I thought they moved forward some yards, and turned away from the window and did not look at them again for the time. While the engines were crossing I heard the "Be ready" for the 7 o'clock passenger train given from Ardwick, and when I turned round from last seeing the engines I accepted the "Be ready," immediately after which the "Train entering section" was given, at about 7.4; on accepting the "Be ready" I told Woolrich to take off the signals, but I am not certain whether he took off the distant-signals. I gave on the "Be ready" to Longsight No. 1 immediately after receiving it, and it was at once accepted. The first knowledge I had of the engines being still on the up fast line was from hearing one of them whistle, the home-signal being then lowered for the 7 o'clock train. On hearing this whistle it flashed across me that I had made a mistake, and I sprang to the home-signal lever and threw it back to danger, but whether the 7 o'clock train had passed it or not I cannot say, and the collision then occurred about

10 yards on the down side of my cabin. I could not tell the speed of the passenger train on collision. I did not hear the noise of any brake being applied, and the whistle of the engine would have prevented my doing so. The night was a little hazy. I was under the impression that the engines had cleared the up fast line when I accepted the "Be ready" from Ardwick for the 7 o'clock train. I cannot at all account for the impression I had of being able to cross the engines from the up fast to the down fast line by the restoration of No. 41 lever to its normal position. I had never before attempted to send traffic from the down loop to the down fast line as I did upon this occasion, the proper way being along the down loop through Nos. 49 and 48, and then back through No. 32. I had heard no shout from the driver of either engine after the engine and van had passed my cabin on their way to the down loop line. I am a total abstainer and have been so for over five years, and I had nothing to drink stronger than cocoa on the 4th instant, and had taken my last meal at 1.15 p.m. I should have had my tea about 7. I had gone off duty at 10.0 p.m. on the 3rd, and had a good night's rest, having gone to bed about 11.0 p.m. and risen about 7.30 a.m. I had had nothing whatever to upset me in the course of the day.

10. *James Woolrich*, porter; 23 years' service.—I was first a porter for 5 years, then pointsman for 10 years, guard for about six years, and porter for about two years. For the last three weeks I have been in Longsight cabin No. 4, with Swift, renewing my knowledge of a signalman's duties. I was in the cabin on the evening of the 4th, having come on duty about 7.0 a.m. to remain till 7.0 p.m. I did whatever the signalman ordered me, whether attending to the levers or to the block instruments. I remember the signalman telling driver Clarke to cross into the down loop and couple on to the pilot engine, and that then he would let them go along the fast line to Ardwick. I did not notice what Swift was doing to get the engines away, but he said he wanted to get them away as soon as possible. After accepting the "Be ready" for the 7 o'clock train, Swift told me to pull off the signal and I did so, pulling over No. 59, the up home-signal. I had no knowledge of anything being wrong till I heard one of the engines give the danger whistle; I ran to the window at the Longsight end of the box, and I then saw the engines were on the up fast line and shouted this out to Swift, who at once put up the signal. I cannot say whether the passenger train had passed it; the collision immediately occurred. There was a green light at the back of the van when it had crossed to the down loop, but I did not notice what light was showing when it came back. I had noticed nothing unusual about Swift before the collision. He was perfectly sober and had drunk nothing but cocoa. He had had nothing to upset him that I knew of. Swift said nothing to me about the mistake he had made.

11. *Mr. Mawby*, district superintendent at Manchester.—I reached Longsight No. 4 cabin about 7.35 p.m. on the 4th; after looking round the train I went at once into the cabin and looked at the block instruments and found they were all standing to block the lines. Swift was in the cabin; he was perfectly sober, calm and quiet, and not nervous. As soon as he was relieved I sent him home, and saw him afterwards between midnight and 1 a.m. at Longsight station, when he stated that for the moment he believed he could turn and had turned the engines from the up to the down fast line, and discovered his mistake only too late. His age is 38 years.

Conclusion.

This very serious collision was primarily caused by an act of negligence, preceded by an extraordinary delusion on the part of signalman Swift, on duty in Longsight

No. 4 cabin. The facts of the case, as narrated by the witnesses, are briefly as follows:—

Swift had taken up the duty in Longsight No. 4 cabin at 2 p.m., having with him a man named Woolrich, who was learning the duties of signalman, and had been under instruction for about three weeks, and would have been qualified to act as signalman in about another week. At about 7 p.m. it became necessary to send forward two engines and a brake-van (one engine being on the down loop line, and the other engine and van in a siding on the up side of the main line) from Longsight No. 4 to a goods yard on the Ardwick Branch, for which purpose they would have to proceed to Ardwick junction signal-cabin, the next one on the Manchester or down side of Longsight No. 4 cabin. This could be done either by sending them along the down loop line, the down slow line, or the down fast line; the down loop line being already occupied by a down coal train, and there being, as Swift knew by telephone from Ardwick junction cabin, a reason for not sending them along the down slow line, he determined to send them along the down fast line. He accordingly first directed the engine on the down loop line to draw up behind the coal train standing on that line, and then set the crossings and took off disc-signal D (requiring the pulling over of Nos. 38, 40, and 42 point-levers) for the engine and brake-van to proceed from the up siding to the down loop line, telling the driver as he passed the cabin to couple on to the engine already there, and then to come out on to the fast line. The engines having been coupled together on the down loop line, Swift, having previously put back disc-signal D and point-levers Nos. 38 and 40, pulled over point-lever No. 41, which, together with No. 42 (the points on the down loop line), made the crossing between the down loop line and the up fast line, and gave the engines a hand-signal to come back through the crossing, he being at the time under the extraordinary temporary delusion that when they had arrived upon the up fast line, he could, by restoring No. 41 points, cross them from the up fast to the down fast line, though such a means of crossing had never existed, and if it had, it could never have been brought into use by restoring No. 41 lever to its normal position. The engines and van having crossed to the up fast line in obedience to Swift's hand-signal (he having while they were crossing offered the "Be ready" signal to Ardwick junction for the down fast line and having had the signal accepted), he restored the points to their normal position and gave the engines another hand-signal to go forward towards Manchester, still under the impression that in doing so they would cross from the up fast to the down fast line; while the engines were crossing the "Be ready" signal for the 7 o'clock passenger train was received from Ardwick junction, and Swift, after giving them the hand-signal to move forward towards Manchester, and under the belief that they had so moved forward (which the drivers deny having done, as they state they knew if they did they could have not crossed to the down fast line, but would have gone down the up fast line) accepted the "Be ready" signal for the 7 o'clock train, and told Woolrich to take off the signals for it; Woolrich thinking, he states, that Swift had said *signal* not *signals*, lowered only No. 59 up home-signal, but without looking to see what had become of the engines and van, the position of which at this time was that the front end of the engine next Manchester was about 35 yards inside the up home-signal, and the rear end of the brake-van about 22 yards north of the centre of the signal-cabin. Immediately after the lowering of this signal, on hearing one of the engines whistle, it flashed across Swift's mind that he had made a mistake, when he at once threw back the home-signal to danger, but too late, unfortunately, to be of any use, as the engine of the passenger train was already close upon it or had passed it.

Sheldon, the driver of the engine next Manchester, a tank engine with the chimney towards Manchester, had walked across from the down loop line, before drawing down behind the coal train, to the signal-cabin, and told Swift he wanted to go to the Ardwick Branch; Swift, in reply, saying that he would let him go when there was an opportunity and when the other engine and van had come across and had been coupled on to his; Sheldon started to go back in obedience to Swift's hand-signal, quite unaware of what he meant to do with them, and on finding that they were turned on to the up fast line, he stopped on that line as soon as his engine had cleared No. 41 points; he then looked towards the signal-cabin and saw the signalman giving them a white light to go ahead towards Manchester; but on looking over the side of the engine and seeing No. 41 points lying right for the up fast line, he knew that if he moved he would be going in the wrong direction along the up fast line; he therefore remained stationary, and shouted to Swift, "We are on the wrong road," a shout which he thinks Swift did not hear; he then looked towards Manchester along the up fast line, and saw a train.

approaching, the engine being, he thinks, not more than 50 yards off, it being rather hazy at the time; on seeing the train he looked up at the signals (about 35 yards from the front of his engine), and observing from the back light that the up home-signal and the up distant-signal below it (worked from Longsight cabin No. 1) were both lowered, he put steam full on (his engine being still in backward gear, which he had not changed after coming back through the crossing) and gave the alarm whistle; his engine had just got into backward motion, and had gone about six yards, when seeing a collision imminent, he closed the regulator, jumped off into the 4-ft space of the down fast line and escaped without injury. On returning to his engine, Sheldon found that it had stopped about 55 yards from the place of collision, with its leading wheels on the rails, but with the trailing wheels lifted up about a foot and the trailing buffers in the tank of the other engine; the engine of the passenger train being close up to Sheldon's engine.

The evidence of Sheldon's fireman, and of the driver, fireman, and brakesman of the tender engine and van attached to Sheldon's engine, corroborates that of Sheldon in all essential particulars. Clarke, the driver of the tender engine, says that as he passed the signal-cabin on his way to the down loop line Swift told him that the engines were to go together on the down fast line to Ardwick, and that after starting from the down loop line, in obedience to Swift's hand-signal, he found that he was returning through the crossing, which was not in accordance with what Swift had just before told him, as Clarke knew that he could not reach the down fast line from this crossing. He then found that they were turned from the crossing on to the up fast line, and stopped as soon as both engines were on that line. Clarke then at once shouted to Swift, "We are on the wrong road," Swift immediately replying, "Right away, fast line," and waved a light towards Manchester. Clarke still refused to move and again shouted, "We are on the wrong road," to which Swift said nothing. Clarke then looked towards Manchester, and seeing from the back lights that the up home fast line signal and the Longsight No. 1 up distant-signal below it were lowered, he got on to the top of the sand-box, and seeing a train approaching on the up fast line 30 or 40 yards off, he put his engine into forward gear, opened his regulator, and shouted again to Swift, but doubts whether he heard him; the engines then having begun to move slowly towards Stockport, Clarke jumped off towards the down slow line just before the collision, followed by his fireman, both escaping unhurt.

All these four men concur in stating that there was no movement intentionally made towards Manchester after the engines and van had stopped on the up fast line. According to Sheldon's fireman, on the brakes being released after stopping, the recoil of the buffer-springs caused his engine to move slightly towards Manchester, the only movement said to have taken place in that direction.

As regards the passenger train it started punctually from London Road station at 7 p.m., having first to stop at Longsight station. The engine was an eight-wheeled tank engine, running coal bunk in front, with the six leading wheels coupled, and the trailing wheels with radial axle-boxes, its total weight in working order being 43 tons, of which about $33\frac{1}{2}$ tons were on the coupled wheels; these were supplied with brake blocks, applicable only by a screw-brake. The train consisted of seven vehicles, fitted with the plain vacuum-brake applicable from the engine, with an automatic arrangement for applying the brake to the brake-vans, the vehicle next the engine being a third-class carriage with the leading compartment empty in accordance with the London and North-Western Company's rule as regards a vehicle next an engine. The driver, Joseph Burgess, of 16 years' service, and driver for the last four years, had come on duty at 6 p.m. for a spell of about 14 hours, having been off duty for the previous 30 hours. He had come from the Longsight shed, where he could have turned his engine, to London Road chimney in front, with the intention of running coal-bunk first to Stockport, so that at Stockport he might be ready to start, chimney in front, with a goods train for Diggle without having to turn his engine at Stockport. The vacuum-brake had been tried at London Road before starting and found in good order.

After leaving Manchester Burgess' evidence goes to show that on approaching Ardwick junction he found the up distant-signal against him, but that the home-signal for the up fast line was taken off before he reached it; on approaching Longsight No. 4 cabin the two distant-signals for the up fast line were at danger when he passed them, but that on his coming in sight of the home-signal for the up fast line, when about 150 yards from it, the misty state of the weather having prevented his seeing it sooner, he found it was off, as well as Longsight No. 1 cabin distant-signal from the up fast to the up slow line, the latter being the signal he required for running into Longsight station; that his speed at the time of sighting these signals was from

10 to 15 miles an hour, he being prepared to stop at the home-signal, if necessary; but that on finding it off he gave his engine steam, and had increased his speed to about 20 miles an hour, when at the distance of about 50 yards he caught sight of an engine with a red light at the bottom of its chimney; that at once realising that it was on the up fast line he immediately shut off steam, applied the vacuum-brake (which it will be remembered was fitted only to the vehicles and not to the engine) and called to his fireman to put on the engine hand-brake, but had no time to reverse his engine or open the sand-valves before the collision occurred, at a speed reduced from about 20 miles to 10 or 15 miles an hour; that he did not whistle himself, but heard a whistle from the other engine at the same time that he caught sight of it. Burgess did not jump from his engine, and was shaken and bruised. His engine did not leave the rails, but the vehicle next it mounted on to the top of the engine buffer-beam. He could not say how far his engine ran after the collision, which took place inside the Longsight No. 4 up fast line home-signal.

The evidence of Brocklehurst, Burgess' fireman, differs slightly from that of Burgess in the following respects, viz., that he caught sight of Longsight No. 1 up distant-signal "off" when about 400 yards from it, and of Longsight No. 4 up fast line home-signal about 300 yards off, Burgess having put on steam a second or two before he sighted the up distant-signal; that on reaching the Manchester end of Hyde Road Bridge, i.e., about 125 yards from where the engines were standing, or about 130 yards from the point of collision) Burgess shouted to him to put on his brake. (Burgess, it will be seen above, gave the distance of seeing both signals at 150 yards, instead of 400 and 300 yards, and says that he put on steam after seeing them, and also made the distance of first seeing the engines 50 yards instead of 125 yards.) Brocklehurst says that he at once turned round to his brake handle, but had not time to apply the brake before the collision occurred, at a speed of about 15 miles an hour; that he did not jump off, and was shaken but not injured; that the coal bunker of his engine was not damaged. Brocklehurst, together with the other drivers and firemen, testifies to a slightly hazy state of the weather.

The guard of the train in the rear brake carriage was taken quite unawares by the collision while he was in the act of picking up a parcel; he had felt no diminution of speed or any application of the vacuum-brake before it occurred. He was knocked down but not hurt. He found that the principal injuries were received in the rear compartments of the vehicle next the engine, the bodies of these compartments being crushed together. He made the time of the collision about 7.4 p.m.

Such being a brief narrative of the facts connected with this very serious collision, it will be seen that blame can hardly be attached to any of the servants of the Company with the passenger train or with the engines and brake-van. It is quite possible that with a very vigilant out-look the light on the front of the leading engine might have been seen sooner from the engine of the passenger train, and the head light of the passenger train seen sooner from the footplate of the leading engine; but considering the circumstances of the case, viz., that the signals were off for the passenger train, and that one of the last things in the world that the driver would expect to find were two engines and a van standing close inside it, and that the drivers of the engines and the van knew that the signalman was aware they were standing close under his cabin on the up fast line, and that the last thing they would expect him to do would be to lower the home-signal for that line, the distance of about 125 yards, at which it seems probable the drivers became mutually aware that a collision was imminent, may not be considered unreasonable, especially as the weather is said to have been somewhat hazy. Assuming the speed of the passenger train to have been at least 30 miles an hour, the distance was not sufficient—as the brake was only a simple and not an automatic one, and as even this brake power was applicable to only rather more than one-third of the weight of the train—to allow of the speed being much reduced, although the driver appears to have done what he could with the means at his command.

The drivers of the two engines attached to the van seem also to have acted with promptitude, and to have moved back as far as they had time to do, on realising what was going to happen.

As I before stated, the collision was entirely due to an act of negligence preceded by an extraordinary delusion on the part of signalman Swift. His delusion was in imagining that it was possible for him to cross the two engines and brake-van from the up fast line to the down fast line by restoring to its normal position No. 41 lever, one of those which he had previously moved to allow the engines and van to cross from the down loop line to the up fast line. How he got this delusion it is impossible

to say, but he has adhered to the same statement from the evening on which the collision occurred up to the time at which I examined him. I could far more readily have understood his erroneously conceiving that he had crossed the engines from the down loop to the down fast line, as then the restoring of No. 41 lever to its normal position would have enabled the engines and van to proceed on their journey along the down fast line. However, judging Swift from his own evidence that he had intended to bring, and did bring, the engines and van on to the up fast line, then comes his grave act of negligence in not assuring himself that they were clear of that line before proceeding to accept the "Be ready" signal for the up passenger train, and ordering the signals to be lowered for that very line. Had he but done his bounden duty in this respect he would have prevented the sad consequences that followed from his previous delusion. Swift, with regard to this, says he thought he saw the engines and van in motion after signalling them to go forward towards Manchester. The evidence, however, goes to show that the only movement he could have seen was that caused by the rebound of the buffers upon the brakes being released when the engines had stopped after crossing.

Swift had been on duty about five hours when the collision occurred; there is not the least suspicion that he was the worse for liquor, nor had he had any worry, mental or otherwise, to upset him. He had been four years signalman, and for the past seven months had been employed in Longsight cabin No. 4. He had frequently sent forward engines from the down loop line to Ardwick along the down fast line, but always before by first crossing them on to the down slow line, and thence on to the down fast line, the only mode of accomplishing the operation.

Swift's previous conduct had been very good, and on the present occasion he adopted the honourable and manly course of taking to himself the whole of the blame, and of not attempting to throw any of it on other parties.

It will have been observed that the engine of the passenger train was running coal-bunk in front from London Road station without there having been any necessity for its having done so, as there was a turntable at the Longsight depôt, whence it had started to be attached to its train, and as there was also one at Stockport, where it had to take on a goods train to Diggle after having disposed of the passenger train at Stockport. It is quite possible that had the engine been running chimney in front, the driver or fireman might have caught sight, sooner than was the case, of the red light on the chimney of the engine with which the collision took place, and have thus had a longer distance in which to check the speed of the train; there is certainly no justification for the practice of running the engines of trains otherwise than chimney in front when there is no sufficient reason (as in the present instance) for the contrary practice.

Again, it is highly probable, that the force of this collision, and the disastrous consequences attending it, would have been much diminished had the passenger train been fitted with more ample continuous brake power than was the case. The total weight of the train was, including passengers, about 157 tons, the engine weighing about 43 tons, and the vehicles and passengers about 114 tons; the weight on the braked wheels of the engine was about $33\frac{1}{2}$ tons, and on those of the vehicles about 63 tons, the latter alone being fitted with the vacuum-brake arrangements in the driver's hands; the engine was fitted only with a hand-brake, which the fireman acknowledges he had no time to put on before the collision. Had the continuous brake been fitted, as it ought to have been, to the engine as well as to the vehicles, its retarding effect would have been, of course, much increased when the driver applied it, and the violence of the collision considerably lessened.

I think it only right to draw attention to the fact that all six drivers and firemen involved in this collision would have been on duty, but for the collision, for periods extending from $12\frac{1}{2}$ to $14\frac{3}{4}$ hours; the driver and fireman of one of the goods engines having been on duty 12 hours when the collision occurred. It is true that they had all been off duty on the previous day, but in my opinion there is no justification, except in cases of emergency, for allowing men in the responsible positions occupied by drivers and firemen to remain on duty for such a length of time as these six men would have done had they completed their allotted time.

To guard against the recurrence of a similar mistake to that made by signalman Swift in the present case, it might be useful to provide points No. 41 with a disc-signal for setting back from the up fast line to the down loop line, and to bring the signal-post carrying Nos. 51, 53, and 54 signals close up to points No. 42, so that hand-signals may be, as far as possible, dispensed with, and drivers may know exactly where

they are intended to go. If a simple and trustworthy means could be devised for automatically preventing a signalman accepting the block-signal for a train before it is right for him to do so, it would be a great safeguard against such a mistake as was the immediate cause of the present collision.

The Assistant Secretary,
Railway Department, Board of Trade.

I have, &c.,
C. S. HUTCHINSON,
Major-General, R.E.

APPENDIX.

DAMAGE to LOCOMOTIVE and CARRIAGE STOCK.—COLLISION at HYDE ROAD, October 4th, 1889.

Engine 2,362.—Eight-wheeled side tank engine, working 7.0 p.m. local train Manchester to Stockport. Front of smoke-box damaged, vacuum-pipes broken, frames slightly bent.

Engine 2,325.—Special tank engine, six wheels coupled. Leading and trailing buffer-planks broken, front end of frame slightly bent.

Engine 1,571.—Six-wheel coupled goods engine with tender. Back of tender knocked in and two side plates of tank damaged, tender buffer-plank broken.

Third-class 1,545.—Body destroyed, two headstocks, four buffer-rods, four buffer-sockets, two vacuum hose

pipes, brake-work fittings damaged, one pair of wheels slightly damaged.

Brake-van 547.—One end completely stove in, end panels and two side panels, two headstocks, four buffer-rods, four buffer-sockets, one vacuum hose pipe, one coupling, two side chains, two sole bars, and brake-work fittings damaged.

Composite 1,107.—End panels knocked in, two buffer-rods bent.

Composite 218.—Two buffer-rods bent.

Third-class 571.—Two buffer-rods bent.

Printed copies of the above report were sent to the Company on the 21st November.

LONDON AND NORTH-WESTERN RAILWAY.

Board of Trade, (Railway Department,)
3rd December 1889.

SIR,

IN compliance with the instructions contained in your Minute of the 9th ultimo, I have the honour to report, for the information of the Board of Trade, the result of my enquiry into the circumstances, which attended the accident, that occurred on the 3rd ultimo, at Colwyn Bay station, on the London and North-Western Railway.

The two last coaches of an excursion train, which was returning from Longsight, near Manchester, to Llandudno, were pushed off the rails when the train was being backed into a siding at Colwyn Bay to allow the Irish mail to pass.

No persons were injured. The two coaches that were pushed off the rails, and the permanent way were slightly damaged.

The excursion train left Longsight at 9.35 p.m. on the 2nd, and arrived at Colwyn Bay about 1.29 a.m. on the 3rd ultimo. It consisted of an engine and 14 coaches. The first and last coaches were brake-vans, with a guard in each, and the whole train was fitted with the simple vacuum-brake.

When the excursion train approached Colwyn Bay, the station-signals, including the starting-signals, were at "All right" for the train to proceed, but while the passengers were disembarking, the signalman received notice of the approach of the down Irish mail, so he placed his starting and advanced-signal at danger, and from the door of his cabin, he directed the engine-driver of the excursion train to push his train back into the siding at the east end of the station. The siding points are about seven yards from the foot of the ramp at the east end of the platform at the down side of the line. The signalman stated that he gave five beats on the gong to the man in charge of the yard at the east end of the station, before the excursion train arrived, and again after it came to a stand at the station, but that he received no acknowledgment; that he looked towards the tail of the train to satisfy himself that the last vehicle was clear of the siding-junction points, pulled over the junction-points, and then called to the driver, "inside:" to notify to him that he was to push his train back into the siding; but no one appears to have heard the gong-signals, and the engine-driver stated that the signalman waved him back with a hand lamp, and told him to shunt for the Irish mail; which he commenced to do.

After pushing the train back some carriage lengths, the driver felt that something was wrong. He stopped, and got down to see what was the matter. He found the rear van standing across the up and down main lines, and the two hind wheels of the coach next to it were off the rails. The remaining four wheels of this coach were on the rails that lead to the siding.

The necessary measures were taken at once to stop the down Irish mail and an up goods train, and the down line was cleared in about $1\frac{1}{2}$ hours after the accident.

Description.

Colwyn Bay is an ordinary road side station with a goods yard at the down side and at the east end of the station. The railway is level and curves to the north on a radius of 76 chains.

The station is protected by home and distant-signals, and has starting signals, which are all interlocked with the points, and are worked from a raised cabin, which is situated at the west end of the station and at the up side of the line. The down starting-signal is at the west end of the down line platform, about 17 feet east of the cabin. The points on the down line, over which the excursion train should have passed into the siding, are 17 feet east of the bottom of the ramp at the east end of the down line platform, and 630 feet east of the cabin. The train itself, which is reported to have stopped when the engine was about its own length east of the starting-signal, was 533 feet long.

The van at the tail of the train, when it came to a stand across the up and down lines, was about 150 feet east of the points through which it should have run, and the composite carriage next to it had the two hind wheels pulled off the rails of the siding junction line, but remained coupled to the van with a coupling rod and shackle that were bent.

It was reported that all the marks on the rails, and on the chairs, were made by pulling the vehicles on, except an indentation on the check-rail of the first crossing which was marked with the flange of a wheel, and beyond which the marks in the ballast showed the subsequent course of the van and of the last coach.

Evidence.

Thomas Davies stated: I am a signalman at Colwyn Bay, and was on duty there on the morning of November 3rd, when the excursion train from Belle Vue arrived. I came on duty at 6.0 p.m. on Saturday November 2nd. The excursion arrived at Colwyn Bay at 1.29 a.m. on the 3rd. When the train came in the signals were off. Just before the train came to the station I gave five strokes on the gong to the man on the platform to signify my intention of shunting the excursion train into the goods yard, after the train came to a stand. I again gave five gongs, and told the driver of the excursion train "to back into the siding." I did not receive an acknowledgment to the gong-signal. I opened the points leading from the down main line to the siding. I did not give the driver a signal, but only told him "inside," after making the points. He gave a whistle, and commenced to set his train back. The train had been at a stand about two minutes before the driver began to set back. I saw the train move back about two engine lengths, and then stop very suddenly; and I heard someone shouting. At this time I had a goods train on the up line, running from Llandudno junction to Colwyn Bay. Fearing something was wrong with the excursion train, I put the signals at danger against the goods train, and placed three fog-signals on the up line. I then walked from my box towards the driver of the excursion train, and asked him what was the matter; he replied, "I do not know, only I received a danger-signal, to stop." I then walked towards the rear guard of the excursion train, and I then noticed that the rear van was across the up main line. I returned to my box as quickly as possible, and gave the obstruction signal to Llandudno junction, and to Llysfaen station. When the excursion train came to a stand, the engine stood by my down starting-signal. I am sure I did not give the driver any signal to set back. It is not customary

to do so; I simply shouted "inside." I had no right to set the points for the down refuge siding, before receiving an acknowledgment from the yard, on the gong, in response to the five gongs I had sent. I received no acknowledgment that night from the yard, before the excursion train moved back. I have been 29 years in the Company's service, and 19 years a signalman at Colwyn Bay. I have never before turned a train into the siding without first receiving an acknowledgment from the yard on the gong. I am certain I set the points for the siding before I gave the driver instructions to set back. Before I pulled over the points, I looked to see if I could see the side lights of the rear van, and as I saw them, I felt sure that the rear of the train was clear of the points. The excursion train consisted of 14 carriages. I pulled No. 10, the point-lever on the down-line, and then No. 9, the safety point-lever. No. 8 lever works a disc close to safety points: this disc is to show drivers when the safety point is right for their train to draw out of the siding. I did not pull No. 8 for the excursion train when backing into the siding. I am certain No. 8 and 9 levers were in their notches before I told the driver to push his train back.

David E. Morris stated: I was driver of the return excursion train from Longsight to Llandudno, which left Longsight at 9.35. p.m., right time, on the 2nd November. I arrived at Colwyn Bay at 1.30 a.m. on the 3rd. All signals were off when my train was running into the station. I brought my train to a stand with my engine, about an engine length from the down starting-signal. I looked back to the rear of the train while waiting for a signal from the guard to start, and I received a green light from both guards to start away. On looking ahead I saw that the starting and advanced-signals were both at danger, and I stepped across the foot-plate, to look in the

direction of the signal-cabin. I saw the signalman standing at the door of the cabin, with a hand-lamp in his hand, waving me back, and he shouted to me to "shunt for the mail." I did not see the signalman go into his cabin after he told me to go back. I reversed my engine, blew the whistle, and at once commenced to set back quietly. After I had gone back about four coach lengths, I found out that something was wrong, and I stopped my train immediately. I got off my engine and went to the front guard, who was on the platform. He asked me "what was the matter," and I replied that the signalman was shunting us for the mail, and that I thought something was wrong. He then ran back to the rear guard to see what was the matter. I then walked back to the rear part of the train, and the signalman overtook me. We went to the rear together, and found that the rear van had left the rails, and also two wheels of the next carriage. The rear van was fouling the up main line. I then returned to my engine. I did not receive any signal from either of the guards nor from anyone on the platform to set back. I simply took the signalman's instructions. I do not know whether I was right in acting on the signalman's instructions. I consider I was right in doing so. I have been in the service of the Company 18 years, and have been a driver about seven years. I came on duty at 8.35 p.m. on the night of November 2nd. I do not know what put the tail of my train off the rails. I did not hear any gong sounded. I have heard the gong before when I have had waggons to put into the sidings. There was a porter in charge of the station, he was standing about the middle of the platform.

Walter Vickers stated: I was rear guard of the return excursion train from Longsight to Llandudno on November 2nd. The train left Longsight at 9.30 p.m., right time. My train consisted of a tank-engine, 12 coaches, and two vans, all fitted with the simple vacuum brake. There was a van in front and one in the rear of the train. We were delayed 2 minutes at Stockport, 10 minutes at Frodsham junction, 10 minutes at Chester ticket stage, and my train arrived at Colwyn Bay at 1.30 a.m. When we arrived at Colwyn Bay, I saw the down starting-signal against us. I first attended to the passengers and did the work in connection with the train, and then gave a signal for my train to start right away. Immediately I gave the driver a signal I observed that my train was setting back. At this time I was standing by the last coach of my train. As soon as I saw that the train was going back, I ran to my van to reverse the tail lights. As soon as I got into my van, I felt a jerk, I looked out and found that my van was across both main lines. I jumped out of my van and gave the driver a red hand lamp signal to stop. The train was stopped immediately, and I then called the front guard to go and protect the up main line. When the train first came to a stand my van was opposite the platform. When I jumped into my van again, it was then opposite the ramp of the platform. I did not hear any gong signal given whilst my train was standing at the platform. I think I should have heard it if it had been given. I had worked up with the excursion train on the morning of the 2nd. I have been 5 years in the Company's service. I heard no passengers complain. My van and two hind wheels of the last coach were off the rails, the van was across both lines, the couplings held on. When my train came to a stand about three coaches besides those that were off, had got over the siding points.

William Herbert stated: I was the front guard of the Belle Vue excursion train on November 2nd. After arriving at Colwyn Bay station, we got the Colwyn Bay passengers out, did the work in connection with the train, and then I received a signal from the rear guard for right away, which I repeated to the driver. The driver whistled and began to set back. Before the driver started the

excursion train back, I got into my van. When the driver had set back about four coach-lengths, the train was brought to a standstill, and I immediately left my van and went back along the train, and the rear guard called me to him. He was then at the end of his train. I saw that the rear van and coach next to it were off the rails. I came back to the signal-box with my lamp to protect the up main line, as the last van was across it. My train had been standing two or three minutes before it moved back. I did not hear the signalman speak to my driver. After attending to the passengers I ran to my van and gave the driver a signal that all was right, and to start. When my train arrived at Colwyn Bay, the starting-signal was off, and when I gave the driver the signal, thinking my train would go forward, the starting-signal had been put to danger, and my train was pushed back instead of going forward. I have been 11 years in the Company's service, and a passenger guard four years. No passengers complained of being hurt.

Thomas Jones, permanent-way inspector, stated: I reached Colwyn Bay station on the morning of November 4, and found the roads all right. The roads have not since been altered, and the traffic has been carried on as before. Nothing has been done to the road for some weeks. No damage was done to the road. I have tested the road, and found it quite right to gauge and line.

Edwin Smith, fireman, bears out the driver's evidence.

David Morris stated: I am one of the platelayers on the Colwyn Bay length, and I was the first to get to the scene of the accident after it happened. I arrived at Colwyn Bay about 2.30 a.m. on November 3rd. I have been a platelayer about 16 years. I assisted to get the carriages on the rails. In pulling them towards the points, the right side rail of the siding was bent. The points were not damaged, and they are now in exactly the same state as before the accident. The siding was in existence before I came into the Company's service. We used the iron ramps to get the vehicles on again. The vehicles were got on the line again about 3 a.m.

B. Powell, station-master, Colwyn Bay, stated that he had no opinion as to the cause of the accident. He was called up after the accident, and was not present when the order to set back was given.

R. Shakespere stated: I am a carriage examiner at Llandudno junction. I got to Colwyn Bay at 11.40 a.m. on the Tuesday after the accident. The vehicles that got off the road were in the siding on the down side, and I examined them. I found the wheels true to gauge; the flanges were not worn, they were quite round. The van and the coach which left the rails are six-wheeled vehicles. They were sent off to Crewe; there was nothing to prevent them travelling safely on their wheels. I have been in the Company's service 12 years. The coaches were damaged, composite 382, which was the last carriage next the van, had the hind drawbar and the off buffer-rod bent, the headstock end damaged, the front coupling link bent, and the step damaged. Brake-van 557, which was the last vehicle of the train, had one buffer casting on the off side broken, the front shackle bent, the vacuum pipe and the front panel damaged. The stepboard was slightly damaged.

Thomas Jones stated: I am an inspector of permanent-way on the London and North-Western Railway, on the Mostyn to Llandudno length. I got to the scene of the accident about 8 a.m. on November 4th, and I examined the place where the van and coach of the excursion train left the rails. My opinion is that the train had either not been clear over the points before setting back, or that the points were made for the siding while the train was setting back. I think

the van went along the down line, and the carriage next to it went along the siding junction line. I have been 28 years in the company's service, and an inspector two years.

Robert Roberts stated: I am ganger in charge of the gang that work at Colwyn Bay station, and my length extends from one mile and a half on the Llandudno side of Colwyn Bay to half a mile on the Chester side of Colwyn Bay station. There are four men in my gang besides myself. I reached the scene

of the accident about 6.30 a.m., on the Sunday morning, when I was going over my length. The vehicles had been got on the rails again before I got to the place. My opinion is that the van had never got over the points, and that the points were turned between the van and carriage. I mean that the van at the tail of the train was pushed back along the down main line, and that the carriage next to the van was pushed along the crossing leading to the siding. I have been in the Company's service for 40 years, and a ganger for 25 years.

Conclusion.

From the foregoing evidence and from a close examination of the locality, there can be no doubt that the van at the tail of the excursion train was pushed back along the main down line, that the coach next to it was pushed back along the siding junction line, and that when the distance between these vehicles became such that the couplings would extend no further, the van was pushed across the up and down main lines, and the two last wheels of the coach next to it were pulled towards it on to the ballast.

This was caused either by the signalman moving the points after the train had commenced to move back, or by the excursion train having come to a stand at Colwyn Bay station, before the van at the tail had passed over these points. I am inclined to think that the last was what occurred. The signalman is to blame for this and for his neglect in not waiting for an acknowledgment to his gong signals before sending the train back. It appears very doubtful to me whether this man ever used his gong, and he should have used his hand-lamp to signal the train back.

He had been on duty about seven and a half hours when the accident occurred.

The points through which the train was shunted and all else appear to have been in good order, and the men who were in charge of the train acted with judgment. I recommend that the stock rails at all points on passenger lines, which are used occasionally as facing-points to shunt trains over, should be tied together with a metal tie bar.

The Assistant Secretary,
Railway Department, Board of Trade.

I have, &c.,
F. H. RICH,
Colonel, R.E.

Printed copies of the above report were sent to the Company on the 30th December.

LONDON AND NORTH-WESTERN AND GREAT WESTERN RAILWAYS.

Board of Trade, (Railway Department,)
1, Whitehall, London, S.W.,

SIR,

16th October 1889.

IN compliance with the instructions contained in the Order of the 19th ultimo, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances which attended the slight double collision that occurred on the 16th ultimo, at Addison Road station.

A Great Western train ran into two gas-tank waggons, that were standing about six yards from the stop-buffers.

The bay line on which the collisions occurred is the joint property of the London and North-Western and Great Western Railway Companies.

Eight passengers are reported to have been shaken and bruised, but their injuries are believed to be slight.

The train consisted of a tank-engine, that was running with the coal-bunker in front, and eight coaches, the first and last being fitted with brake compartments, in which the guard and assistant guard were travelling.

The engine was fitted with a steam and a screw brake, and connected with the automatic vacuum continuous brake to all the vehicles of the train. There were screw brakes as well in the guards' compartments.

The train left Aldgate station at the proper time, 7.13 a.m. It stopped at all stations and reached the bay-line platform at the north end of Addison Road station at the proper time, 7.56 a.m. It is reported to have been running at a speed of about four miles an hour when the engine reached the north end of the platform.

The fireman applied the screw-brake before the engine reached the platform, and the engine-driver, fireman, and guards thought that the train would be stopped before reaching the gas-tank waggons until the engine was close to the waggons, when the fireman tightened the brake, the engine wheels were skidded, and the engine ran forward and struck the gas-tank waggons at a speed of about one mile an hour.

The gas-tank waggons were driven forward against the stop-buffers, which were damaged, and then the waggons rebounded against the engine, which came to a stand about the spot where it struck the waggons.

One of the quarter lights and two connecting links of the passenger carriages were broken.

As soon as the engine wheels skidded, the driver applied the continuous brake, which appears to have acted and brought the coaches to a stand, at the moment the engine struck the gas-tank waggons.

The stop was rather sharp, and as the passengers were preparing to alight, they were somewhat knocked about.

Evidence.

Engine Driver, *Thomas Besant*, stated:—I was engine-driver of the 7.13 a.m. train from Aldgate on the 16th September. My train consisted of a tank engine, running coal-bunker in front, and eight coaches. I had a steam-brake on the engine, the whole train was fitted with the automatic vacuum-brake, and there were screw-brakes in the guards' compartments at each end of the train. I had two guards with the train. I left Aldgate at the proper time and arrived at Addison Road at 8.46 a.m., the proper time. The Addison Road signals were "All right" for me to run into the bay platform on the east side of the line. When I reached the far end of the platform with my train, it was running at a speed of about four miles an hour. I saw that there were some gas-tanks at the end of the bay line as soon as I came into the platform road. There were two gas-tank waggons. The waggons were about six yards from the end of the stop-buffers. As I passed the signal-box the screw-brake was applied on the engine. Just as I thought to bring my train to a full stop, and the fireman applied the screw-brake a little stronger, my wheels picked up, and I struck the waggons with the gas-tanks at a speed of about a mile an hour. I and the fireman remained on the engine. We were not hurt. There was no time after the fireman had applied the screw-brake and the wheels picked up for me to apply the automatic-brake with effect, but I did apply it, and it would go on at about the same moment as I struck the trucks. I did not think I should have struck the trucks, and I do not think I should have done so except for the wheels picking up. I believe mine was the first train that ran into the bay that morning. I have been about 37 years in the Company's service, and 17 years an engineman. I went on duty at 4.15 that morning and went off duty at 2.2 p.m. the previous day (Sunday). My engine was a four-wheel coupled engine. I had a little over 20 inches in my vacuum gauge when the train reached Addison Road. My engine stopped dead as it struck

the gas waggons, which ran forward and struck the stop-buffers, and then rebounded against my engine.

Policeman, *Joseph Ship*, stated:—I was under guard of the 7.13 a.m. train from Aldgate on the 16th September. I was riding in the leading third-class coach which had a brake compartment next the engine. There were eight carriages on the train. As the train reached the bay-line platform at Addison Road it was running at a speed of about three or four miles an hour, the same as usual. The train had almost come to a stand, and I was preparing to get out of my compartment to open the carriage doors, when the engine struck the gas-tank waggons. I had no idea that we were going to strike the gas-tank waggons. I was knocked against the door, but I was not hurt. I then got out and attended to the passengers. I have been in the Company's service about 12 months, and was doing guard's duty on the day in question.

Guard, *William Mansell*, stated:—I was guard in charge of the 7.13 a.m. train from Aldgate on the 16th September. The train started at the proper time and arrived at Addison Road at the proper time, at 7.56 a.m. I was riding in the brake compartment of a second-class carriage at the tail of the train. I think the engine entered the bay line at a speed of three or four miles an hour. I cannot say the speed at the time of the collision, but it was very much reduced from what it was when we entered the bay. I had just looked at my watch, and was in the act of putting it back in my pocket and preparing to get out, when the collision occurred and knocked me against the partition. I was not hurt. I have been in the Company's service six years, and was made guard on 12th June last. When my coach came to a stand there was room for about one or two more at the platform. There were no first or second-class passengers in the train. A few third-class passengers complained of being shaken or bruised.

Conclusion.

This slight double collision appears to have been caused by the engine-driver not taking sufficient account of the greasy state of the rails in the early morning at this time of the year.

This man bears an excellent character and had been on duty about 3 hours and 40 minutes at the time of the collision.

The Assistant Secretary,
Railway Department, Board of Trade.

I have, &c.,
F. H. RICH,
Colmel, R.E.

Printed copies of the above report were sent to the London and North-Western and Great Western Railway Companies on the 30th October.

LONDON AND SOUTH-WESTERN RAILWAY.

Board of Trade, (Railway Department),
1, Whitehall, London, S.W.,

31st August 1889.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 9th instant, the result of my inquiry into the causes of a collision which occurred on the 29th July, at Eastleigh station, on the London and South-Western Railway.

In this case, as two empty carriages and a horse-box were being pushed by the shunting engine from the horse-box siding on to the tail of the 6.15 p.m. up passenger train from Southampton, which was standing at the up platform at Eastleigh station, at about 6.32 p.m., the coupling between the shunting engine and the horse-box became detached, and the three empty vehicles struck the tail of the passenger train, when running at a speed of about four miles an hour.

No vehicle left the rails and none were damaged.

Four persons are returned as having made complaint of injuries.

Description.

At Eastleigh, until quite recently known as Bishopstoke, station, there are up and down through lines, up and down platform lines, and loop or dock lines at the back of the up and down platforms. These lines run from east to west, and at the west end of the station the line to Portsmouth leaves the line to Southampton. There are extensive carriage sidings to the south of the line to Portsmouth, and among other sidings on the north side or up side of the line is a horse-box siding, which is connected through an up siding with the up platform line.

The west signal-box, from which all the points and signals at the west end of the station are worked, is at the north side of the line between the horse-box siding and the up platform. It contains 90 working levers.

The following distances from the safety-points of the horse-box siding should be noted :—

To trailing-points upon up siding	-	-	-	35 yards.
To up siding safety-points and No. 37 disc-signal	-	-	-	36 „
To signal-box	-	-	-	71 „
To point where driver shut off steam	-	-	-	190 „
To end of up platform	-	-	-	196 „
To point of collision	-	-	-	341 „

Evidence.

William Wakeford states: I have been about 32 years in the service, and about 22 years a driver. On the 29th July I came on duty at 8 a.m. with engine "Scott," the regular shunting engine at Bishopstoke. It is a six-wheeled tank-engine, with the driving and trailing wheels coupled. I was employed through the day in shunting, principally in attaching and detaching carriages. I have been employed on this duty for six years. A little after 5 p.m. I went into the carriage sidings, by order of shunter Drew, to bring out two empty carriages to attach to the Guildford train at 6.33. I then got a horse-box out of the horse-box road, which was to be attached to the 7.25 up train. I pushed the three vehicles out of the horse-box road on to the down platform line, then pulled them through the cross-over road on to the down through-line, then backed them through the slips on to the up platform line, and then pulled them into the horse-box road, where I arrived at 6.25. I stood there for about seven minutes, and then, after the Guildford train had run in, the points were set for me and the disc-signal set for me to come out. I pushed out the three vehicles at a speed of about four miles an hour. I shut off steam a few yards short of the end of the platform, and my mate applied the brake slightly. The moment afterwards I saw the vehicles going away from me,

the coupling between my engine and the horse-box having come unhooked. I told my mate to run after them and put down the horse-box brakes. He ran along the platform and overtook them, but there was no brake upon the platform side of the horse-box, so that he could do nothing. Shunter Drew had coupled my engine on to the horse-box. I did not leave my engine, so cannot describe how it was coupled. I know that my engine coupling (two links and a shackle) was used, because when the vehicles left my engine I saw that my engine coupling was hanging loose, and the screw coupling on the horse-box was hitched upon the draw-bar hook. I cannot understand how it came unhooked. I do not remember it ever to have come uncoupled from a carriage before. On one occasion when coming from Northam to Bishopstoke, attached to the tender of "Telford" engine by my coupling, it came unhooked at St. Denys, and I was left standing. On that occasion we were both steaming and had stopped at the signal. I could not explain how this happened. On the 29th I looked at the coupling after the vehicles left the engine. The coupling looked quite free, and the shackle was not stiff. When I was in the horse-box siding neither I nor my fireman left the footplate. I am certain that no one could have uncoupled the horse-box from my engine without my seeing it done. There was no

object in uncoupling the horse-box, as it had to be brought back again into the siding to wait for the 7.25 up train. There was very little difference in the level of the buffers of my engine and those of the horse-box.

Edward Paddon states: I have been 11 years in the service, and four years a fireman. I was fireman to driver Wakeford on the 29th ultimo. His evidence is correct. I had no difficulty in catching up the carriages when they had got about half-way to the tail of the train.

George Drew states: I have been 18½ years in the service. I am shunter at Bishopstoke, where I have been all my service. On the 29th July I came on duty at 8 a.m. There were two carriages to be attached to the Guildford train and a horse-box to the 7.25 up train, and driver Wakeford brought them across into the horse-box siding in the manner described in his evidence. The two carriages had been coupled together when in the siding. I coupled the horse-box on to the carriages loosely, and I also coupled the horse-box on to the front end of the engine. I used the engine coupling. The horse-box screw coupling was hitched up on the draw-bar hook. I am sure that the coupling was made so that the link of the engine coupling was not above the shackle of the screw coupling. The shackle of the engine coupling was not stiff at all. When the engine was pushing back the vehicles from the up platform line into the horse-box siding I went away on to the platform, so as to be ready to couple the carriages on to the train. I am quite sure that I never touched the couplings after I had coupled on the horse-box on the down side of the line. Vehicles are never shunted back loose, unless there is a brake-van attached. I was standing upon the platform at the tail of the Guildford train when the collision took place. I was astonished to see the vehicles leave the engine. They must have been running at about four miles an hour when they struck the Guildford train. I was not able to get at the horse-box brake as it was not on the platform side. No vehicle left the rails. The passenger train was not driven up much. No damage was caused to the rolling stock. I have never seen such a thing happen before, and I cannot account for it in any way. I coupled up in exactly

the same manner as usual. After the accident I looked at the engine coupling. It was hanging straight down. There was no one in the siding who could have uncoupled it.

William Ralph states: I have been about 24 years in the service, and about 14 years a signalman. On the 29th July. I came on duty in Bishopstoke West box at 2 p.m. for eight hours. At about 6 o'clock, or a little after, I let the shunting engine "Scott" into the horse-box siding, with a horse-box and two carriages attached, and after the Guildford train had arrived at 6.30 I set the points, and took off the disc-signal for the engine to push the carriage back to the tail of the Guildford train, to which they were to be attached. I watched the carriages as they passed my box. I frequently do so when carriages are being put back to a train, so as to see how many are going to be attached. I can tell this by the way they are coupled. The coupling between the two carriages was screwed up, that between the carriages and the horse-box was slack, and the engine coupling between the horse-box and the engine was hooked on. I am quite certain of this. It was hanging slack as the engine was pushing. I have no doubt whatever about it. The engine was running between three and four miles an hour. I did not see the vehicles leave the engine. I have frequently seen couplings jump loose when waggons are being shunted, but I cannot remember a case of carriages parting from the engine when being shunted.

Henry Glover states: I am station-master at Bishopstoke, and was in the booking office when the accident happened. I examined the coupling immediately afterwards, and the shackle on the engine was quite free, not in the least stiff. The horse-box screw coupling was hitched up. The same evening I tried several times, and in every sort of way, to see whether, with the same engine and horse-box, the coupling could be made to shake loose, but could not succeed. The statements made to me immediately after the collision by the shunter, driver, and signalman agree in every respect with their evidence as now given. Three of the passengers made a complaint of being shaken, and a woman stated that her child was struck on the head.

Conclusion.

It is clear from the evidence, which was given in a remarkably clear and straightforward manner, that this slight collision was due to a pure accident of an uncommon character, and that no blame is to be attached to any of the servants of the Company.

The three vehicles which came into collision with the passenger train were brought from the carriage sidings upon the down side of the line, where they had been attached to the shunting engine, to the horse-box siding upon the up side of the line, and, in crossing from one side to the other, they were twice pushed and twice pulled by the engine, so that, irrespective of the evidence, it is certain that they were coupled to the engine.

The coupling between the two carriages, which had to be attached to the up train, was screwed up, that between the carriages and the horse-box, which was to be attached to another up train, was not screwed up, and the coupling between the horse-box and the front of the shunting engine, a tank-engine, was made by means of the engine coupling, two links and a shackle, the end link being placed upon the draw-bar hook of the horse-box upon which the screw coupling was hitched up.

The shunter who coupled up the vehicles is quite certain that he was careful to push back the shackle of the screw coupling so that the link of the engine coupling did not ride upon it, and there is no reason to disbelieve him.

The signalman is quite positive that when the vehicles last passed his box, on their way to the train, the coupling between the engine and the horse-box was still attached, so that it must have been jerked off when the engine shut off steam, or at a crossing,

and not when the engine had come to a stand nearly half an hour before, after pulling the vehicles on to the horse-box siding, as I would otherwise have thought probable.

The evidence of the station-master proves that the coupling was in good order, as it was when I saw it, and the shackle was not at all stiff.

I am unable to explain how the coupling came loose, but I understand that similar occurrences upon other lines have led to side-hooks being fitted to carriages upon which screw couplings are hitched up when not in use, and it is quite possible that this collision might not have occurred if the screw coupling of the horse-box had been hitched upon such a hook instead of upon the draw-bar hook, which was used for the engine coupling.

I would advise the Company to make inquiries on this head, and to try these side-hooks which appear to answer well.

The Assistant Secretary,
Railway Department, Board of Trade.

I have, &c.,
F. A. MARINDIN,
Major, R.E.

Printed copies of the above report were sent to the Company on the 21st September.

LONDON AND SOUTH-WESTERN RAILWAY.

Board of Trade, (Railway Department),
1, Whitehall, London, S.W.,
18th January 1890.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 27th ultimo, the result of my inquiry into the causes of an accident which occurred on the 24th ultimo, between Morthoe and Branton, on the Ilfracombe branch of the London and South-Western Railway.

In this case, as the 3.54 p.m. up passenger train from Ilfracombe (consisting of engine and tender, meat-van, London and South-Western third-class brake-carriage, Great Western composite carriage, and Great Western third-class brake-carriage, all fitted with the automatic vacuum-brake) was running round a curve about two miles south of Morthoe station at about 4.15 p.m., the engine left the rails, followed by the whole of the vehicles in the train.

The engine came to a stand 136 yards south of the point where was found the first mark of a wheel having mounted and run over the high rail on the outside of the curve, the leading and driving wheels, and all the tender wheels being off towards the outside of the curve, but the trailing wheels of this engine had not left the rails. The other vehicles in the train had all run off towards the right or the 6-ft. side, and were nearly foul of the down line. None of them were upset, and none of the couplings were broken.

One passenger who was in the rear carriage complained of injury.

The damages to the rolling-stock were as follows:—

No. 394 engine. Right guard-iron bolt broken. Right feed-bag (india-rubber hose) broken. Bottom plate in left leading spring partially broken.

No. 8,148, meat-van, one connecting-rod bent.

In the permanent-way one rail and 125 chairs were broken, and 10 rails were bent.

Description.

The scene of this accident was about two miles south of Morthoe station and about four miles north of Branton station.

At this point the line is upon a 16-chain curve to the right looking southwards, and upon a gradient of 1 in 40, which falls southwards the whole way from Morthoe station. The 16-chain curve is 30 chains in length, and the run-off was at about the centre of it, or about 330 yards south of the commencement of this curve, and the end of an easy curve to the right of 180 chains radius. The line is here in a cutting, one side of which is rock, about 22 ft. high, and it runs out upon a short embankment 13 ft. high, over which the engine passed before it came to a stand. The line was opened as a light railway in 1874; it was at this point doubled in 1887, and doubling operations are still in progress at other parts of the line.

The original permanent-way was of different weights, but the whole of the lighter parts have been replaced by heavier, and the bridges have been strengthened where necessary, the line now being classed as an ordinary railway.

The permanent-way upon the curve where the accident happened has not been relaid, having been originally of the heavier type, and it consists of 75-lb. double-headed iron rails, in 22-ft. lengths; 32-lb. cast-iron chairs, two spikes and trenails to each chair; outside oak keys; fish-plates weighing $21\frac{1}{2}$ lbs. per pair; and nine sleepers to each rail length, those at the joints and centre of each rail measuring 10 ins. by 5 ins. in section, and the other six measuring 9 ins. by $4\frac{1}{2}$ ins. in section, and the intervals between the sleepers being 2 ft. at the joints and 2 ft. 9 in. elsewhere.

The engine is one of those made specially for running upon the branch when it was opened as a light railway.

It is a six-wheeled coupled engine with a four-wheeled tender, and its weight and wheel-base are as follows:—

Weight.					Tons. Cwts. Qrs.		
Leading wheels	-	-	-	-	9	2	0
Driving „	-	-	-	-	8	2	0
Trailing „	-	-	-	-	1	0	0
Total					25	4	0

Wheel-base.					Ft. Ins.	
Leading to driving wheels	-	-	-	-	6	4
Driving to trailing „	-	-	-	-	7	6
Total					13	10

The engine wheels are 4 ft. $6\frac{1}{2}$ ins. in diameter.

It was last in the shops in October 1889, when the tyres were turned up and the valves and pistons were examined. The mileage since 18th October, when it left the shops, is 3,605 miles.

Evidence.

Robert Whitehorn states: I am locomotive inspector at Barnstaple. I received a message at 4.45 p.m. on the 24th December, saying that the 3.54 p.m. up passenger train from Ilfracombe was off the line between Morthoe and Braunton, near the Foxhunter's Inn. I attached the break-down van to the 4.47 p.m. down train, which left Barnstaple at 5.15 p.m. On arriving near the 221 mile-post, I found the engine and train from Ilfracombe off the line. The engine and tender had taken to the left side of the line, all the wheels except the trailing wheels of the engine being badly off the rails. The remainder of the train had taken to the right side of the line, almost fouling the down line. I slewed the coaches a little more clear of the down road, and then got the engine and tender on the rails and coupled them together. Mr. Meadway, the locomotive foreman at Exeter, then arrived with the Exeter break-down gang and put the coaches on the rails. The road was clear at about midnight. The wheels of the engine, No. 395, are in first-class condition and the springs appear to be all right. Inspector Palmer called my attention to a dirty mark on the rail. This mark was, I consider, caused by a stone having been ground to powder by the train. Immediately alongside was the mark of a flange of the engine on the top of the rail. I did not see any mark where the left wheel mounted, but there was a mark along the top of the rail. I did not measure the length of it. I did not see any stone alongside the rail any nearer than the heap which is now there, nor did I see any broken bits of stone alongside the rail near the mark upon the top of it. The left leading wheels of the engine when I first arrived were from 20 inches to 24 inches outside the left rail. The wheels of this engine were turned up in October last, and the engine came back from Exeter on October 19th. The springs have not been removed

since the accident. There is no rule limiting the speed down this incline. The usual speed is from 30 to 35 miles an hour. This train is allowed 15 minutes to run from Morthoe to Braunton, a distance of six miles. The engine has only done about a month's work since it came out of the shops, as I have two, which work alternate weeks.

Arthur Docker states: I have been between 17 and 18 years in the service, and a driver for six years, working on the Ilfracombe branch for $4\frac{1}{2}$ years. On the 24th December I came on duty at noon. My regular hours are from 6.15 a.m. to 2.55 p.m. one day and from 2 p.m. to 10 p.m. next day. On the 24th I was driver of the 3.54 p.m. train from Ilfracombe to Barnstaple, with engine No. 394. I started four minutes late from Ilfracombe and five minutes late from Morthoe. I gave the engine a little steam to start from Morthoe, and then shut it off. I went down the bank at the usual speed, keeping the brake slightly on. I always check the train before coming on to Foxhunter's curve, and then release the brake a little going round the curve, and I did so on this occasion. My usual speed on the curve is about 20 miles an hour. About the middle of the curve the engine went over something which felt like a stone, and immediately afterwards left the rails, all the vehicles in the train leaving the rails also. There were four vehicles in the train, viz., No. 8,148 meat-van, No. 446 London and South-Western third-class brake, and No. 70 Great Western composite, No. 1,495 Great Western third-class carriage. I at once applied the brake full power, and came to a stand in about 136 yards. After the train came to a stand I got off my engine and inspected the rails where the engine mounted. I found a small quantity of light powder on the higher and outer rail of the curve, and I consider this powder

to be the remains of a stone which had been crushed by the engine. I did not see any crushed stone by the side of the rail. The ballast heap at the side of the line was in much the same state as it is now, except that it has been a little trodden down. There was a contractor's gang at work alongside at the time. I had some conversation with the foreman, and I said to him that it looked as if I had run over a stone. I cannot remember what he said in reply. Two days afterwards I saw him again at the same place. He then said that he thought the train had been rolling about a bit as it was approaching the place. He did not say anything about the speed having been too high. If he now says that I was running at a speed of 40 miles an hour it is a mistake. I felt nothing whatever wrong with the line before leaving the rails, and the first thing I felt amiss was a lift at the leading end of the engine as if it had run over a stone. My engine is a steady-running engine and was in good order. The brake acted well. I have never before felt anything wrong with the road on that curve. I think that 40 miles an hour would be too high a speed at that point. I can only account for the mishap by a stone being on the line. I did not see any stone upon the line. It was dusk at the time. I was running at a speed of about 20 miles an hour. The engine brake, the right guard-iron bolts, and the right feed-box were damaged, as was also the permanent-way. A delay of 8 hours 24 minutes was caused.

William Featherstone states: I have been about seven years in the service and a fireman for nearly five years. I was fireman to driver Docker on the 24th December. I have heard his evidence read over, and so far as I know it is correct, but I did not myself examine the line after the accident. After leaving Morthoe everything proceeded as usual until reaching the curve at the Foxhunter's Inn. I was standing on the left-hand side of the engine as we were running, and suddenly it appeared to pass over some obstruction, and it left the rails, followed by the train. I felt a most distinct lift at the leading end when the engine left the rails. It felt exactly as if the left wheel had run over something and not as if it had run up the rail. The brake was slightly rubbing at the time. I feel confident, to the best of my judgment, that the speed did not exceed 20 miles an hour at the time. The speed on this curve is always less than at other points between Morthoe and Braunton. When we came to a stand I proceeded to Headon Mill, the block-signalling station in advance, to have the necessary steps for safety taken.

William Lethaby states: I have been 23 years in the service, and a guard for 17 years; 15 years on the Ilfracombe branch. On the 24th December I came on duty at 7.15 a.m. My usual hours are from 7.15 a.m. to 5.25 p.m. I was guard of the 3.54 p.m. train from Ilfracombe to Barnstaple, which was made up as follows: engine and tender, meat-van, third-class brake, Great Western composite, and Great Western third-class brake in which I was riding. There were between 40 and 50 passengers in the train. The train was fitted with the automatic vacuum-brake, with steam-brake on the engine. When near the Foxhunter's Inn the train left the rails and came to a stand in about 136 yards, the engine and tender being off to the left, and the carriages to the right. None were upset and no couplings were broken. One lady, a passenger in the Great Western third-class carriage, complained of injury, but no one seemed to be seriously hurt. I sent assistant guard Beer back to Morthoe to report the occurrence to Mr. Lodder, and the fireman to Headon Mill signal-box. I remained with the train and transferred the passengers into the 4 p.m. special train from Barnstaple, sending them back to Morthoe, the down line being clear. Beer and I protected the trains until ordered to return to Morthoe by special engine. The train was running at the usual speed at the time the mishap occurred. The speed was 23 or 24 miles an hour, or perhaps 25. I

did not apply my brake coming down the bank, as I saw that the driver had applied the vacuum-brake. As soon as possible I went to see what had caused the accident, and I saw a small quantity of dust or powder on the higher or outer rail. This, I concluded, was the remains of a stone. I consider a stone might have rolled down off the heap of ballast which was close by. I saw no remains of a crushed stone at the side of the rail. I should say that what I saw on the rail was undoubtedly the remains of a crushed stone, and not merely mud off a man's boot. There was nothing amiss with the line. I felt no previous lurching or rolling about. There was no sudden check to the train as if the brake had been suddenly applied before it left the rails. The heap of ballast which was at the side of the line seems to have shrunk a bit since the accident. Immediately I left my van after the accident I looked at my watch and it was then 4.16. We left Morthoe at 4.10. I do not remember ever to have been four minutes late in leaving Morthoe and yet to have got into Braunton before time. Our speed at that point has never been as high as 50 miles an hour. I do not think that trains are running now any slower at that point than they used to before the accident.

William Beer states: I have been nearly seven years in the service, and about five years an assistant guard. On the 24th December I came on duty at 7 p.m. and should have left duty at 5.25 p.m. I was acting as assistant guard to the 3.54 p.m. train from Ilfracombe to Barnstaple, and was riding in the front brake-compartment. Whilst running between Morthoe and Braunton I felt a jerk as if something was on the rail, and with the same I felt the coaches leave the rails, and I had enough to do to keep myself on my legs. After the train had come to a stand I got out of my van and received instructions from guard Lethaby to proceed to Morthoe to tell the station-master what had happened. On the way back to Morthoe I noticed a little dust on the outer and higher rail of the curve, and this I consider was the remains of a stone. I saw this dust before anyone else had got to the spot. I did not mention it to anyone until I came back from Morthoe, and then they were all talking about it. I felt no rolling about before the accident. We were then running at about the usual speed, which I think was about 20 miles an hour. At this place the speed is I think often higher than 20 miles an hour. The engine brake was not applied suddenly before the accident. I had my hand-brake on a little going down the bank. I heard of no complaints of injury from any of the passengers.

James Lewis states: I am a labourer working for the contractors for the doubling of the Ilfracombe line, and on the 24th December I was casting out stone and muck on to a heap alongside the rail at the time the 3.54 p.m. train from Ilfracombe passed. I did not to my knowledge throw any stones or muck on to the rail, and I looked just before the train came along, and saw that the rails were quite clear. I do not think it probable that a stone was on the line, as the heap was not disturbed after I saw that the rails were clear, and I am sure that I did not throw anything on to the line after that. After the train had passed where I was working I could see nothing on the rail that would account for the accident. There was a little light muck on the rail which I consider would be caused by anybody stepping on it. I was working outside the heap which was outside the high rail. I heard the train coming and looked round, and I saw the engine first when it was a few yards away. It was running faster than usual, I fancy. I should think the speed was over 40 miles an hour. After the engine had passed me about an engine length the brake appeared to be put hard on. I did not notice before the engine got to me whether the brake was on or not. I was standing just opposite to the place where there was a little dirt on the rail. I had looked at the rail before the train passed, and I did not notice the muck at that time. Since the accident

trains have been passing much slower than they did before. All the men have made that remark. I was using a pick at the time the train passed. I had just commenced work again when the train passed. It was a wet afternoon. Immediately before the train passed a man had gone across the line to get a hammer. He may have stepped on the rail, but I did not see him do so. The train was certainly running faster than usual, and it was rolling about a good deal. William Gear, who was working a few yards away from me, passed the remark to me before the train ran off that it was running too fast.

William Gear states: I am a labourer working for the contractors. At the time the train passed on the 24th December I was working rather more than five or six yards from Lewis, upon the Ilfracombe side of him, and I was similarly engaged. When we heard the train coming we both walked out towards the line to see if the rails were clear of any obstruction, as is our practice on the approach of trains. The rails were perfectly clear, and when about to resume work the train passed and got off the line. I did not examine the rails after the train had got off. I first saw the train coming when it was between the bridge and the place where I was working. I am no judge of speed, but it was running faster than usual and faster than it has since the accident. The carriages were all rocking, but the speed was not such as to alarm me or make me think the train was going to leave the rails. I made no remark to Lewis as to the speed at that time. Either the Monday or the Saturday before I remarked, "If they come round too fast there will be an accident."

John Ross states: I am ganger in the employ of the contractors in charge of the gang getting stones and ballast where the accident happened. About two or three minutes before the 3.54 p.m. train from Ilfracombe passed on the 24th December I saw that the rails were perfectly clear. I looked, as I always do before every train passes, and saw that the road was clear. I then got over a fence on the opposite side of the line and waited till the train had passed. I saw the train before it got to the bridge. I said to the man working by me at the time, "She is coming at a lick." The train was swaying about the usual manner, but I did not notice any great oscillation until just as the carriages were passing me. I estimate the speed at 40 miles an hour. Some trains pass much faster than others. I cannot say that I have seen any come faster than this one was; some of them certainly come much slower. This train was running much faster than the one did this morning. I think all trains are running slower since the accident. Last Saturday I thought one was going to stop as it was coming so quietly. On the accident happening I immediately went towards the train, and on my way examined the rails. I could see nothing to account for the accident. I could find no indication of any stones having been crushed on the rails by the engine. I met the driver of the train and asked him what was the matter, and he said there had been stones upon the rails. I said, "I did not think so." He did not point out the place where he thought it had happened. I saw the marks of the wheel where it had mounted the rail, but did not see any sign of a stone having been crushed there. Before the train reached the spot where the engine mounted the rail, I noticed the carriage rocking in an unusual manner; but whether the engine was off the line at the time I cannot say. I do not think that it is possible that a stone could have got on the rails after I saw that the line was clear. It was not as much as three minutes before the train came that I examined the line, and I am perfectly certain that the rails were then clear. They were mucked all over from men walking on them! I have received orders from the contractor's foreman to be sure to keep the rails clear.

Albert Taylor states: I am a contractors' labourer. Just before the train passed I walked across the line

to where Lewis was working to get a hammer, and then walked back again. I looked purposely to see if there was anything on the rails, and saw that there was nothing. I saw the train rocking and going fast before it reached the spot where I was working. One of the men with me remarked to me, "She is coming to-night, ain't she?"

William Skinner states: I am ganger in the Company's service in charge of the length on which the accident happened. I had walked over the length as usual on the morning of the 24th December, and everything was in good order. I was working about a mile from the spot on the Braunton side of it, and when informed of the accident by fireman Featherstone I went to the spot, getting there about half an hour after the accident. The first thing I did was to see if I could find out what had caused the train to leave the rails. I saw traces of a stone having been crushed on the higher rail, and also scratches as if something had slipped under the wheel. In my opinion the engine had passed over and crushed a stone. There were marks of the engine having mounted at the place where the stone was crushed. The line was in good order and right to gauge. The ordinary speed of trains at this point is from 25 to 26 miles an hour. Trains generally come cautiously round the curve.

John Palmer states: I am inspector of permanent-way for the Ilfracombe branch. On the 24th December I arrived at the scene of the accident at about 5.45 p.m., or about an hour and a half after it occurred. I examined the line to see if I could find the cause of the accident, and I traced the mark of the engine wheel which had mounted the rail back to a spot opposite a heap of muck where the contractor's men were working. The first mark of the flange of the wheel was upon the top of the rail. I could not see any marks of the flange having unduly rubbed the working face of the rail. Close by where was the mark of the flange on the top of the rail there were signs of a stone having been crushed, and there was a little powdered stone on the rail. There were also several scratches. I gauged the line and found it in perfect working order. The line is on a sharp curve, and the road has a cant of $4\frac{1}{2}$ inches. I am of opinion that a flat wedge-shaped stone on the rail would have caused the engine to mount the rail. There were no fragments of the crushed stone to be found at the side of the rail, only the powder on the rail. I called the attention of William Smeldon, ganger of the next length, and platelayers Jones and Corney to the powder. The damage to the permanent-way was: the rail and 125 chairs broken, and 10 rails bent. The marks of the powder were over the edges of the crown of the rail as well as the top. There were a lot of tracks of men walking on the rails, but this was quite a different mark. The broken rail was the sixth from the mark, on the low side. It seemed as if this was the place where the carriages left the rails. Before I got to the place a trolley with two rails and nine chairs on it had passed over the spot where I saw the powdered stone.

William Smeldon states: I am ganger of the next length towards Ilfracombe, and was working about a mile from the place where the accident happened. I saw the train pass, and it was running at much the usual speed, about 30 miles an hour, or from 25 to 30. At that point there is a little curve. None of my gang remarked that the speed was too high. I came down with a trolley, and saw Inspector Palmer. The stuff on the rail was of no consequence. There were plenty of marks about of men treading on the rail, and the mark which Inspector Palmer showed me was nothing different to the other marks.

William Jones, platelayer, thinks the mark, which was about the size of a man's hand, was made by a crushed stone, and that it was rather different from the

other marks about. He saw no pieces of stone at the side of the rail. He was braking down the trolley and did not feel any sign of its running over a stone.

Thomas Corney, platelayer, thinks the mark was that of a crushed stone.

Frederick Meadway states: I am locomotive foreman at Exeter. Upon my arrival at the scene of the accident at about 9 p.m. I endeavoured to ascertain what had caused it. I found marks on the high rail 136 yards back from where the engine had come to a stand, where the leading wheel had mounted the rail. There was also opposite the spot a mark on the rail as of a stone or dirt having been crushed. The engine (No. 394) is in good order. I can only account for the accident by the theory that a stone was on the rail. If the mark was that of a crushed stone, it must have been a very small one. I would not attach much importance to such a mark, except on such a sharp curve. There was evidently something on the rail which had been run over, but I would not like to say positively whether it was that which threw the engine off or not. If there were some other possible cause I would rather attribute the accident to that.

George Vallance states: I am assistant traffic superintendent. I was with Mr. Meadway, and corroborate his statement.

Mr. Coombes states: I am assistant agent for the contractors, Messrs. Lucas and Aird. I went to the scene of the accident with Mr. Vallance and Mr. Meadway. I saw the mark on the rail, but I should not like to say that it was caused by a stone being crushed. It was only one mark among many similar ones, only larger than some.

Henry Newton states: I am a timekeeper in the contractors' service. I was a passenger in the train in a third-class compartment of the second vehicle behind the tender. I estimate the speed when the train left the rails at 40 miles an hour. The speed did not alarm me, as it was not higher than it often is there. Sometimes the speed is higher. One day, a month or two ago, I timed a train between the 222nd and 221st mile-post, and it ran the distance in exactly one minute. I very often time the train. I once timed one at 58 seconds in running this mile. The time was taken by a stop-watch belonging to Dr. King, who was travelling with me. There is no doubt that the time was correctly taken. It was the 7.15 up train. I cannot remember the date. It was about two or three months ago, but I cannot say exactly. I never made any report or mention of the facts. I examined the line immediately after the accident, and could see no particular mark on the rails to account for the engine having mounted. I did not see any sign of a crushed stone.

Conclusion.

From the evidence given above, and from the marks which were left upon the permanent-way, it is clear that the left leading wheel of the engine mounted the outer rail of the sharp curve upon which it was then running, ran along it for about 17 feet, and then dropped off on the outside, on to one of the chair keys. The next seven chairs on the left side were broken, but the first broken chair on the right side was on the fourth sleeper south of the one where the wheel dropped off. The two chairs north of this one were, however, marked. Southwards of this most of the chairs were broken, and the sixth rail on the right side south of the first mark was broken, this being evidently the cause of the carriages running off toward the inside and not the outside of the curve.

If the trailing wheels had not fortunately kept on the rails, it is more than probable that the engine would have fallen over the low embankment across which it ran before coming to a stand, and in this case the consequences to this train might have been serious. The continuous brake was promptly applied and acted well, doing very good service.

The permanent-way was in good order, except that it was rather too tight to gauge for a line upon a sharp curve, and there was a super-elevation of the outer rail to the extent of $4\frac{1}{2}$ inches. The curve was regular, and there were no low places in the rails.

The engine was in good running order, and the only spring which was found defective had one partially broken plate, the fracture being clearly due to the accident.

Under these circumstances it is necessary to seek for some other cause for the accident than any defect in the permanent-way or rolling-stock, and the evidence is so conflicting that it is not easy to determine it.

At the spot where the engine wheel mounted there were gangs of contractors' labourers employed in getting out ballast for use on the doubling operations at another part of the line. Most of these men were working at the rock cutting on the outside of the down line, but two or three men were digging out gravel and stones outside the up line, and piling it up into a heap about $2\frac{1}{2}$ feet high, close outside the outer rail of the curve. With one exception the evidence of the whole of the Company's servants examined is to the effect that the engine ran over and crushed a small stone, which left a mark on the rail close to the spot where the wheel mounted it, while according to the evidence of the contractors' men the rails were perfectly clear of any obstruction, and the mark found upon the rail was only one of many others made by muddy boots. In this respect the evidence of the ganger of the length next to that upon which the accident happens agrees with that of the contractors' men, for he says that "the stuff upon the rail was of no consequence," and every one agrees in stating that there was nothing more upon the rail but some powder or mud, with a few scratches, and that there were no traces of any crushed stone by the side of the rail.

The evidence as to the speed of the train is also conflicting. The Company's servants put it at 20 to 25 miles an hour, and the bystanders at over 40 miles an hour.

The time allowed for running between Morthoe and Braunton with this train is 15 minutes, which is ample, and necessitates an average speed of only 24 miles an hour, but it is quite clear from the evidence, as well as from the records taken from the signalmen's books, that this speed is very often exceeded, it being a very common occurrence for a train, even one allowed only 12 minutes, to run the distance between Morthoe and Braunton under the booked time, and not infrequently in as little as 9 minutes, necessitating the high average speed of 40 miles an hour.

I am of opinion, after a careful consideration of all the evidence, that there certainly was some small stone upon the line which was crushed by the engine wheel, but, as there were no traces of any pieces of this stone at the side of the rails, it must have been so small a one that it is difficult to believe that the obstruction could have been sufficient to cause the engine wheel to mount the rail, unless the speed had been higher than it should have been.

The tightness of the gauge, and the build of the engine, which has a rigid wheel-base of 13 feet 10 inches, would account in some degree for the mounting of the rail upon the outer wheel being lifted to a very small extent.

I do not consider it right that gangs of contractors' men should be put to work upon a line which is open for traffic, without careful and constant supervision by some servant of the railway company, and the piling up of a heap of ballast so close to a rail that it would be perfectly easy for a piece of stone to be rolled down upon the rail by the shaking of a passing train is most objectionable, and should under no circumstances be allowed.

The curves and gradients upon this line, which was made in the first instance as a light line, are such that any high speed is certainly dangerous, and steps should be taken to secure that the booked times are adhered to. It would also conduce to the safety of travelling if engines with a shorter rigid wheel-base were made use of.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

F. A. MARINDIN,
Major, R.E.

Printed copies of the above report were sent to the Company on the 7th February.

LONDON, CHATHAM, AND DOVER RAILWAY.

Board of Trade, (Railway Department,)
1, Whitehall London, S.W.,

SIR, 16th August 1889.

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 2nd ultimo, the result of my enquiry into the causes of the accident which occurred on the 1st ultimo at Nunhead Junction station on the London, Chatham, and Dover Railway.

In this case, while the 8.43 a.m. passenger train (which consisted of a tank engine and 14 vehicles) from Greenwich for Holborn was passing through a cross-over road between the middle line and the up line close to the up end of the Nunhead platforms at which the train had stopped the 11th and 12th vehicles from the engine left the rails; the 11th vehicle broke away from the one in front of it and stopped about 80 yards from the first mark of a wheel leaving the rails obliquely across the interspace between the up line and a siding to the right of it, its right front wheel being in the 4-ft. space of this siding and its left hind wheel in the 4-ft. space of the up line; the 12th vehicle partly followed the direction of the 11th and stopped close to it with its right wheels in the interspace and its left wheels in the 4-ft. space of the up line, the coupling and side chains between it and the 11th vehicle being broken, but those between it and the 13th having remained good.

One passenger (a boy about 14 years old) broke his arm in getting out of the 11th vehicle after it had stopped and three other passengers complained of having been shaken.

The two vehicles which left the rails were slightly damaged, the cost of the repairs amounting to about 9*l.* 10*s.*

In the permanent way three crossing chairs, one heel chair, two slide chairs, and 50 common chairs were broken, the cost of replacing them and of repairing the damages to a disc signal being about 12*l.* 10*s.*

Description.

At Nunhead Junction station the lines to and from the Crystal Palace and Greenwich diverge and unite on the down side of the station. There are an up line a middle line and a down line in the station, the two former uniting on the up side of the station by means of a cross-over road presenting facing points to up trains starting from the middle line which is principally used for Greenwich trains. There is a siding in continuation of the middle line.

The junction and station are properly signalled, the interlocking being carried out in a raised signal cabin 210 yards from the facing points of the cross-over road; the up home signals, three in number, are on a bracketed post 35 yards short of the facing points, the middle one of the three referring to a train passing from the middle line to the up main line. The facing points are provided with the usual safety appliances which are stated to have been in no ways damaged by the accident. The cross-over road is 58 yards long and consists of two reverse curves, the first, to the left, of 10 chains radius, and the second, to the right, of 12 chains radius, with a straight portion about 16 yards long between them. The gauge of the crossing is about correct, and the super-elevation of the outer rail of the curves is about $\frac{1}{2}$ an inch. The gradient from the end of the platform through and beyond the cross-over road falls towards London at 1 in 72.

The first mark observed of a wheel mounting was on the right tongue of the facing points 10 feet from its tip, and thence a diagonal mark, about two feet long, across the head of the rail.

The next mark was on the key and jaw of the right heel chair, six feet from the first mark.

The next four right chairs were broken. There were no marks on the next three right chairs, the fifth, sixth, and seventh from heel of the points.

The 8th right chair was broken.

The 9th right chair was chipped on the outside.

There were no marks from the 10th to the 24th right chairs.

The 25th, 26th, and 27th V crossing chairs were broken and a wheel took the wrong side of the V crossing running into the interspace between the cross-over road and the siding. The carriage (the 11th from the engine) to which this wheel belonged, then bore away to the right, broke the coupling between it and the carriage in front of it, knocked down two disc signals in the interspace, one 55 yards and the other 83 yards from the first mark, coming to rest with its front right wheel in the 4-ft. space of the siding and its left trailing wheel in the 4-ft. space of the up main line; the carriage behind it (the 12th from the engine) remained coupled to it and was dragged off the rails to the right, the 13th vehicle remaining on the rails of the cross-over road and also the 14th, the rear-most vehicle, a brake van. On the left rail the first mark observable was on the nuts of the fish-plate bolts on the inside of the heel of the left switch, the 2nd, 3rd, and 4th chairs beyond this were broken, but there were no other marks till the V crossing was reached.

The carriage which left the rails, No. 54, was an ordinary four-wheeled third-class carriage, with a wheel base of 15 feet; it began to run in 1884, and its wheels had been last turned up in November 1887; the flanges are now slightly worn, the right ones being somewhat sharper than the left. The axles were found to be very slightly bent after the accident; but the springs, 6 feet long, each consisting of nine plates, were not damaged. The centres of the buffers of this carriage, of the van in front of it, and of the carriage behind it, were practically the same height above rail level. The six vehicles in front of No. 54 were short buffered, and No. 54 and the three vehicles behind it were long buffered.

Evidence.

1. *John Osborne*, station-master at Nunhead; 25 years' service, 10 years station-master at Nunhead.—I saw the 8.43 a.m. train arrive from Greenwich on the 1st July, when it consisted of an engine and 14 vehicles. The engine was a tank engine. It arrived at right time 8.54 a.m., and started at right time 8.55 a.m. After the train started I was standing with my back to it, when a shout from the platform attracted my attention, and on turning round I saw the rear of the train had come to rest. I saw the 11th coach standing across the space between the blind siding and the up line, and the 12th coach off

the road nearer to the rails of the up line. The coupling and side chains were broken between the 11th and 12th coaches; these were the only two coaches of which any wheels were off the road. The front of the train, consisting of the first 10 carriages, had gone on to Peckham Rye and had not stopped between Nunhead and Peckham Rye. I immediately afterwards examined the points leading from the middle to the up road and found nothing wrong with the points. The first mark I saw was on the inner edge of the right point about 2 feet from the heel of the points. I then traced a diagonal mark

across the top of the switch, this mark reached about two feet from where it was first visible. Having satisfied myself as to where the wheel had crossed the rail, I went to attend to the two coaches that were off the road. I did not see the boy jump out who broke his arm. Two passengers complained of being shaken. The up line was fit for running at 5 minutes to 11.

2. *Ernest Harry Smith*, signalman; six years' service, the whole time as signalman.—I have been two months at Nunhead and came on duty there on the 1st July at 7.20 a.m. to remain till 2 o'clock. I took the Greenwich train "on line" from Brockley Lane at 8.51 and it arrived at 8.54 a.m. on the middle road. Before the train arrived I pulled over the levers to set the road for the train to leave, and after the train arrived I lowered No. 20, the middle arm on the three-armed post which is the signal for going from the middle to the up road. The train started at 8.55, and as it left the station I put up the starting signal when I believe the tail of the train was just past it. The next train would be the Palace train for which No. 11 crossing would have to be placed in its normal position. I got the Palace train "on line" at 8.54 a.m. before the Greenwich train had started. I made no attempt to alter the points before the Greenwich train had got beyond them, and I cannot account for the two vehicles of the Greenwich train leaving the rails. I did not see either of them leave the rails, but I saw one of them running off the rails before it broke away from the train and come to rest close to the furthest disc. I noticed no rattling of the levers when the vehicles left the rails. On seeing what had occurred I went to the cabin door with a red flag to try and stop the engine of the Greenwich train, but finding that useless I went to the Peckham Rye instrument to try and stop the down train for which I had received a "Be ready" signal at 8.54—thinking the down line might be foul—and I gave the block signal (six beats). The message was not in time to stop the down train at Peckham Rye, but it was stopped by my down signals being at danger, and it was afterwards admitted into the station on its being found that the down line was clear. I was alone in the cabin. I am quite sure I did not attempt to move any of the levers connected with the Greenwich train till after the accident. There was no difficulty in moving Nos. 06 and 11 levers about three-quarters of an hour after the accident. I had not tried to move them before that.

3. *Charles Alfred Hayes*, porter; five years' service, 15 months as porter.—I have been at Nunhead since October, and on the morning of the 1st July I was engaged in oiling and cleaning the points, and when the train left the station I was about half-way between the points at the end of the crossing through which the train passed. I had already been cleaning the points at the London end of the crossing, and was coming back to clean those at the other end of the crossing. When the train approached I stepped out of its way on to the blind siding beyond the middle road, and I watched it coming towards me. Just about as the middle of the train passed me I saw the fourth vehicle from the rear and the one behind it both off the rails; the one nearest Peckham was the furthest from the rails when I noticed it. The vehicles which were off the rails had passed me when I first saw them. I did not see the coupling break, but I saw the front carriage of the two come to rest across the space between the siding and the up line near the first disc. I at once went up to the points nearest to the station, and found nothing whatever wrong about them; the plunger was through the transverse bar, and the points lying for the up road. I did not notice when the signal, which had been taken off for the Greenwich train, was put back to danger; it is the middle arm of the three. The first mark I saw of the wheel having gone off the rail was the broken chair beyond the points. I saw no mark on the tongue of the points of a wheel having passed over them. I was walking towards the station when

I saw the carriages off the rails; the last two vehicles remained on the rails of the crossing. I heard no movement of the rods when the train was passing.

4. *John Robert West*, engine-driver; 24 years' service, about eight years driver.—I came on duty on the 1st July at 4.15 a.m., to go off at 1.24 p.m. I had the same engine all the morning, viz., No. 87, a tank-engine, with six wheels, four wheels coupled, viz., the driving and leading wheels, inside cylinders 17 ins. by 22 ins. The engine was fitted with a hand-brake and with the Westinghouse brake applying to the four coupled wheels. I took down the 7.30 a.m. train from Holborn to Greenwich, and started back at 8.43 a.m. with a train for Holborn. The engine was running chimney first; and I had a train of 14 vehicles, including four brake-carriages, with a guard in front, one in the 10th, and another in the rear vehicle. The brake-power on the train consisted of the hand-brakes, on three of the brake-carriages or vans, the train not being fitted with the Westinghouse appliances. We arrived at Nunhead all-right, and started about a minute late with the proper starting signal, viz., the middle arm of the three-armed post for leaving the middle road for Peckham. I arrived at Peckham about 9 o'clock, I think two minutes late, without knowing that I had left part of the train behind me, and the first I knew of it was from a passenger remarking that I had not got all my train. The head guard then ran back, and found out that we had left four vehicles behind, the screw coupling at the back of the 10th carriage and the side chains being broken. My place is on the right-hand side of the engine. The last I had seen of the tail of the train was when it left the end of the platform at Nunhead. I do not know when the starting-signal at Nunhead was put back to danger. I was quite unconscious from the working of the engine that I had left four vehicles behind me. We were detained 17 minutes at Peckham waiting for information as to what had occurred, and then proceeded towards Holborn, where we arrived all-right.

5. *Henry Day*, fireman; five years in the service, two years as fireman.—I have been working with West for the last two months and was with him on the 1st of July when the accident occurred to the 8.43 a.m. train from Greenwich. My place was on the left-hand side of the engine. The train reached Nunhead all right, and after starting from Nunhead I was quite unconscious there had been any accident before being informed of it at Peckham. I had been looking back at Nunhead until the rear of the train had passed the platform. I did not consider it any part of my duty to watch the train until it had passed through the crossing at Nunhead.

6. *John Fisher*, guard; seven years' service, five years as guard.—I was guard in charge of the 8.43 a.m. train from Greenwich for Holborn on the 1st of July. The train consisted of a tank engine, a second class brake, three carriages, a brake carriage, four carriages another brake carriage, and behind this brake carriage three carriages, and then a brake van last of all, that is altogether 14 vehicles. There was another guard in the second brake carriage, and a third guard in the rear vehicle of all. There might have been perhaps 200 passengers in the train on leaving Nunhead, I do not know how many of these would be in the rear four vehicles. The brake power under my control was the hand brake in my van. We left Greenwich at right time, arrived at Nunhead all right at 8.54, and started for Peckham Rye at 8.55. I noticed the proper signal was off for us to start, viz., the middle signal on the three armed post. I was not conscious that any accident had occurred to the train till we had reached Peckham Rye, when I found that the whole of the train was not there, four vehicles having been left behind and not knowing where they were. I found that one of the side chains was broken behind the 10th vehicle, and there was part of the

screw coupling which was broken in the eye. On leaving Nunhead I had seen the coaches clear of the platform on the near-side, but not on the off side, and I exchanged signals with the rear guard. After starting from Nunhead I had not looked back.

7. *Henry Davis*, acting guard; 18 months' service, about four months acting guard.—On the 1st July I was acting as guard of the 8.43 a.m. train from Greenwich. I occupied the middle brake carriage, that is, the fifth from the engine. When the train started from Nunhead I looked back until I had seen the man at the rear brake get into it and give me a signal. I passed the signal to the head guard. I did not look back after the train had left the station, and I was quite unconscious that any part of the train had been left behind until I had reached Peckham Rye, and on getting out of the train there I looked back and found that the rear four vehicles had been left behind.

8. *Fagg*, acting guard; 15 months' service, three months as acting guard.—I was riding in the rear break, the 14th vehicle from the engine of the 8.43 p.m. train from Greenwich on 1st July, and on starting from Nunhead platform exchanged hand signals with the head guard. All was right with the train up to that time. I knew nothing of the accident until I observed the coaches in front of me jumping as

they were passing through the crossing. I did not feel any jerk in stopping as the vehicle I was riding in, as well as the one in front, did not leave the rails.

9. *Robert Gosling*, signal fitter; 23 years' service, 20 years signal fitter.—I have charge of the points at Nunhead. I had seen No. 11 points at 8 o'clock on the morning of the 1st July, when I passed them on my way to breakfast. They were then lying for the straight road. I next saw them about half-past 8, when I came back from breakfast, when they were still lying for the straight road. I next saw them after the accident about 9 o'clock, when they were lying for the crossing. I saw nothing about them at all wrong. The plunger was through the transverse bar. I saw no mark on the top of the right switch. The first marks I saw were on the tops of the fish-plate bolts at the heel of the right switch between the switch and the stock rail. I saw no corresponding marks at the heel of the left switch. I noticed before the accident that a stud was broken on the left locking bar; this was at the station end of it. The absence of this stud would not have enabled the signalman to do anything wrong with the bar. It was No. 06 lever that worked this bar. I was going to put in a new stud the same morning. I am quite certain that I examined the top of the right switch carefully about 9 o'clock, and saw no wheel mark whatever on the top.

Conclusion.

It thus appears that just after the 8.43 a.m. passenger train, consisting of a tank engine and 14 vehicles (of which the 5th, 6th, 7th, 8th, 9th, and 10th were short buffered), from Greenwich for Holborn, had started from Nunhead station, the 11th vehicle (a third-class carriage) left the rails, its right leading wheel having mounted the right switch of a cross-over road leading (with a left-handed 10-chain curve, followed by a right-handed 12-chain curve) from the middle line upon which the train had been standing at Nunhead to the up main line. This carriage then ran off the rails, making the marks before described, broke away from the vehicle in front of it, and came to rest about 83 yards from the first mark, obliquely across the space between the up line and a siding parallel to it, having dragged off the rails after it the 12th vehicle, the 13th and 14th still remaining on the rails of the cross-over road.

When the wheel left the rails the engine had run about 170 yards from its starting point, and as the gradient on leaving the platform falls towards Peckham Rye at 1 in 72, a considerable speed had no doubt been attained at the time the rear of the train was entering the cross-over road. There was nothing perceptible in the condition of the permanent way when I saw it a few days after the accident to account for its occurrence. The facing points of the cross-over road are provided with a bolt and lifting bars, and if these were in good order, as they were said to have been (with the exception of a broken stud at one end of one of the lifting bars, comparatively of no consequence), it is quite impossible that any action of the signalman can have caused the accident. As, moreover, the first distinct mark was that of a wheel having mounted the right switch 10 feet from its tip, the conclusion is strengthened that the accident was not due to any cause connected with the movement or condition of the facing points. Nor was there anything discoverable in the condition of the carriage, No. 54, which left the rails, nor in that of the one in front of it, nor of the one behind it, to account for the accident; the flange of the right leading wheel was somewhat worn, but not at all dangerously so; the springs were in perfect order after the accident, the brasses were not worn, and the slight bending of the axle was no doubt a consequence of the accident.

In the absence of any other sufficient reason, the accident must, in my opinion, be attributed to too high a speed having been attained by the rear of the train when it entered the curve of 10-chain radius, where, from the nature of the case, it is impossible to give the usual super-elevation to the outer rail, and owing to this speed and to the want of the usual super-elevation, the right leading wheel of the 11th vehicle mounted the rail on the outside of the curve. The fact of the six vehicles in front of the 11th having been short buffered and the 11th and three vehicles behind it long buffered, may have introduced some inequality in the running of the 10th and 11th vehicles, and helped to cause the front wheel of the 11th vehicle to mount the outer rail of the curve.

It was very singular that neither driver, nor fireman, nor either of the two front guards discovered that they had left four-fourteenths of their train behind them till they reached Peckham Rye. It would appear to be only a reasonable precaution that the fireman should keep an eye on the rear of his train till it has passed through the cross-over road and is on the up line.

In consequence of this accident the attention of drivers should be drawn to the necessity of observing a slow rate of speed when proceeding from the middle line to the up line at Nunhead, until their trains have cleared the cross-over road.

It would be possible to give rather more super-elevation, than it now has, to the outer rail of the 10 chain curve of the cross-over road and to make the gauge of this curve somewhat easier than it is at present; these alterations might be useful in preventing the recurrence of a similar accident, and I recommend their being carried out.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

C. S. HUTCHINSON,
Major-General, R.E.

Printed copies of the above report were sent to the Company on the 10th September.

LONDON, CHATHAM, AND DOVER RAILWAY.

Board of Trade, (Railway Department,)
8, Richmond Terrace, London, S.W.,
15th February 1890.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 15th November last, the result of my enquiry into the causes of the collision which occurred on the 14th November at St. Paul's junction, near St. Paul's station, at the south end of Blackfriars Bridge, on the London, Chatham, and Dover Railway.

My report has been delayed owing to the serious injuries sustained by one of the principal witnesses, in consequence of which and of my having been detained by special duty in Ireland, I was able to take his evidence only a few days since.

In this case, while the 8.40 a.m. up passenger train from Greenwich for Holborn Viaduct was running through St. Paul's junction, its engine came into collision with the engine which had brought up the 8.15 a.m. passenger train from the Crystal Palace to St. Paul's station, and which engine had in the act of running round a portion of its train been stupidly and unnecessarily allowed to foul the junction just as the Greenwich train was approaching and passing it.

Complaints of injury have been received from 25 passengers, but it is believed that none of the cases are serious.

The only Company's servant injured was the yard foreman in charge of the shunting engine, and he sustained a compound fracture of the left leg, which had to be amputated.

The passenger train consisted of a six-wheeled (four wheels coupled) tank-engine, running chimney in front, and of 14 vehicles, including four brake carriages, the coupled wheels of the engine and the wheels of the three vehicles next it being fitted with the Westinghouse automatic brake.

The engine of the passenger train became buffer-locked with the shunting engine (an eight-wheeled bogie tank-engine, running coal bunk in front) and was dragged off the rails.

A list of damage to the rolling-stock is given in an Appendix. In the permanent-way one rail was wrenched out of its place and bent. Five common chairs, a pair of fish-plates, and five fish-bolts were broken.

Description.

There are two signal cabins, A and B, at the entrance to St. Paul's station; cabin A working the points and signals more immediately relating to the junction between the through lines and the station lines, and cabin B those principally connected with the station itself. The cabins are 140 yards apart, and there is a good deal of electrical interlocking between them. The collision occurred at the fouling point of the junction of two up lines, one leading through the station to Ludgate Hill and the other to the station bays, the Greenwich train running in on the former and the unattached engine

running out (owing to a mistake) on the latter. The points, No. 59, through which the unattached engine ought to have gone back are worked from cabin B, and are about 80 yards on the station side of the point of collision. The signals taken off for the Greenwich train were a home-signal and a distant-signal, worked from cabin A, and controlled from cabin B, the home-signal being 104 yards on the Blackfriars side of the point of collision, and a home-signal (on a bridge) worked from cabin B, about 35 yards on the station side of the point of collision.

Evidence.

1. *John James Finch*, signalman; 15 years' service, 14 years signalman: I have worked in St. Paul's junction cabin A box since it was open, nearly four years since.—I came on duty there at 7.0 a.m. on the 14th November to remain until 2.0 p.m. I had a booking boy in the box with me. When I came on duty the weather was rather misty; the fog-signalmen were out and using fog-signals; about 9 o'clock the fog had become less thick, but the fog-signalmen were still out and still using fog-signals. There was a platelayer attending to the incoming signal No. 16, there was also a man standing near the cabin attending to the outgoing roads. The Crystal Palace train, due at 8.46 a.m., passed the cabin at 8.56, running into No. 3 Bay, and I had nothing more to do with that train or its engine before the collision. After the Crystal Palace train arrived there was a train from Beckenham at 9 a.m., then a Maidstone train at 9.5 a.m., another Beckenham train at 9.7 a.m., then a Crystal Palace train at 9.11 a.m., running on to the loop, and the next was the Greenwich train due at 9.14. This train was given on from Blackfriars at 9.13 a.m. I gave it on to cabin "B" at 9.14 a.m., kept the road set as it had been for the Crystal Palace train, and after St. Paul's cabin B. had electrically released me, I lowered No. 16 stop-signal and No. 17 distant-signal, these being the only signals I had to lower to admit the train on to the loop. Cabin "B" had lowered No. 77, before he was able to allow me to lower my signals. At this time I was well able to see the stop-signals in the direction of Blackfriars, and in the station direction I could see as far as cabin "B." An incoming train from Victoria to Hendon was passing along the Metropolitan line at the time, and I was attending to the signals for another train following the Hendon train when the Greenwich train was approaching the cabin, and at the same time I saw the light engine coming out from the station along the road leading to Bays Nos. 1 and 2. On seeing this I went to the door, and seeing where the engine was I shouted out to the yard foreman who was on the footplate on the side next the cabin. I shouted as loud as I could bawl. I know he heard me because I heard him shout to the driver at once. After shouting I ran to the levers and put back Nos. 16 and 17 against the Greenwich train, but by this time it had passed No. 16, and was on No. 11 points. It was out of my power to throw up No. 77 signal worked from "B" cabin, having my road set for running into the loop. The light engine had not stopped but was still running forward at a speed of two or three miles an hour when it met the engine of the passenger train, that of the passenger train being about the same, viz., two or three miles an hour. I think the collision occurred with the right-hand buffer of the Greenwich engine striking the centre of the buffer beam of the light engine. The effect of the collision was that the engine of the Greenwich train carried forward the light engine towards the station for a short distance, and I believe the engines remained together. The engine of the Greenwich train was thrown off the rails to the right, the light engine remaining on the rails on which it had been running. There is no reason that I am aware of why the light engine should have come as far forward as it did in order to get back to its coaches. On the road on which it was running it could not have got back on to its

coaches by coming forward to my cabin. It has never been the custom to send an engine forward along the lines leading to bays Nos. 1 and 2 in order to get back through No. 11 points. I had had no conversation with the yard foreman about this light engine. I think before the engine reached the points through which it was intended to have gone back the signals must have been off for the Greenwich train. There was nothing in the state of the weather to prevent signals being seen for a considerable distance. I heard no whistling either from the light engine or from the Greenwich engine. The collision occurred at 9.16 a.m. I had no conversation with the driver of the light engine or with the yard foreman after the collision. I cannot say where the driver of the Greenwich train first saw that there was a possibility of a collision.

2. *James Richards*, signalman; 21 years railway service, 20½ years as signalman; the last 12½ years with the London, Chatham, and Dover Company.—I have been employed in cabin "B" St. Paul's station for the last 3½ years, as long as the cabin has been opened. I came on duty there on the 14th November at 7.0 a.m. to remain till 2.0 p.m. I have a booking boy with me in the cabin, and he was there on the 14th. The Crystal Palace train, due at 8.46 a.m., arrived at 8.58 a.m., 12 minutes late, in No. 3 bay. The rear portion of this train forms the 8.53 a.m. empty train to Greenwich, and that train went away at 9.5 a.m. from the same line on which it had arrived, and there then remained four saloons and a composite attached to the Crystal Palace train. The engine then backed these five vehicles on to the outside road, four vehicles were left standing on this road and then the engine and brake went forward into No. 3, and I signalled them down into "B" bay, so that the brake might be left in "B" bay; the engine then went back into No. 3 and then came back on to the four vehicles which were standing foul of 59 points and pulled them clear of "59." The engine was then cut off from the four vehicles, went forward into No. 2 bay, went out from No. 2 to run to the other end of No. 59 to get round the vehicles and place them back in No. 2, where some spare vehicles were standing, so as to form an empty train for Loughborough. When the vehicles were standing foul of No. 59 points I called out to the yard foreman to know how he was going to get round them, as the saloons were standing foul of "59," and he replied that he would go back on No. 3, get hold of the saloons, and get them clear of "59," and this operation was performed by the engine which then returned in No. 2, after having pulled the saloons clear of "59." When the engine was coming out along the "in" road I called out to him to go along steady to No. 59, and he acknowledged my signal by waving his hand, and called out "Right." I watched the engine and thought it came to a stand just behind No. 59 points, and it was then that I pulled off the signal for the "in" Greenwich train for which I had received the "Be ready" signal from cabin A at 9.13 a.m. When I received the "Be ready" from cabin A for the Greenwich train the engine had come as I thought to a stand clear of 59 points, and I then at once lowered the "in" signal, which I should not have done had I seen the engine travelling forward. After lowering the signal for the Greenwich train I looked towards Blackfriars and saw the light engine

in motion forwards. I ran from the window to the instrument to try and get the attention of Cabin A, and I saw that he was already at the window trying to stop the train and the engine. I had for some reason to come to the station end of the box, and it was then that I saw the light engine moving forward, and before I had time to get to the other end of the box so as to throw the signal to danger the collision had occurred. The morning had been foggy, but the fog had cleared away to a great extent, so that I could see the bridge signals from the cabin, and so far as I know there could have been no difficulty in seeing the position of the signals from the light engine. I can form no idea why the yard foreman should have thought it necessary to go forward beyond No. 59 points, except that he might have had it in his mind that he was on the down loop line, and that by going through the junction he might get back on No. 3. It had been a perfectly clear understanding between the yard foreman and myself that he was to go just beyond No. 59 points and there remain until I opened the points to let him in, which I could not have done until after the Greenwich train had arrived, as No. 77 signal closes No. 59 points. The yard foreman had repeatedly performed a similar operation to what he ought to have done on this occasion. There would be no fog-signalman standing anywhere near so as to give the engineman warning until he got up close to the junction. The state of the weather at the time was such that there was no need for fog-signalmen, although they had not yet been called in. I gave no signal to the driver of the light engine as he passed the cabin as the yard foreman was in charge of the engine at the time. The driver as he passed my cabin was going steadily.

3. *William Herbert*, signal lad; 17 years of age, 3½ years' service, signal lad all the time.—I have been two years in St. Paul's station cabin B. I came on duty at 7 a.m. on the 14th November to remain until 2 p.m. I heard the yard foreman ask Richards to let him run round the four saloons by means of 59 points and Richards said "Right." After that the engine passed the cabin towards the points and I saw it stop just behind the points. After the engine had stopped at the points, Richards pulled off 77 and 75 signals to let the Greenwich train in; he then looked out of the window at the station end of the cabin, and saw that the engine had moved on. He made some remark to me about it, and ran to the instrument to call the attention of cabin A., but he had not time to do so before the collision occurred. There was no time for him to go to the signal to put it up. I before this heard Richards tell the yard foreman that the vehicles were not clear of 59, and I know that after this the vehicles were pulled clear of 59 points before the engine ran round to the other end.

4. *Richard Read*, driver; 25 years' service, 15 years driver.—I commenced work on the 14th November at 4.15 a.m., to book off at 1.30 p.m. I was driving No. 87 tank-engine, six wheels, the four leading wheels coupled. I started from Greenwich punctually at 8.40 a.m. with a passenger train for Holborn Viaduct. The train consisted of 14 vehicles, including four brake-carriages and three guards. The Westinghouse brake was fitted to the four coupled wheels of the engine, and to the three vehicles next the engine, but not to the remainder of the train. In addition to this there was the hand-brake on the engine, and the hand-brakes in the guards' vans. The engine was running chimney in front, and my position was on the right-hand side of the engine. Fireman Semark was with me on the foot-plate. Nothing particular occurred on the journey as far as Borough Road, which was the last stop before St. Paul's. We left Borough Road one minute late and found all signals right beyond Borough Road to St. Paul's. On approaching St. Paul's junction I saw the distant-signal off, the middle signal of the three outside the junction off, and also

the high signal on the bridge, and they all remained off as I approached them. I was able to see No. 16, the in-loop stop-signal some distance off, but not so far as I could have done had the weather been perfectly clear. I saw the signal on the bridge standing clear when I was near the junction points, my speed at this time being between six or seven miles an hour. On seeing this signal off I did not increase my speed, but continued to slack it off as I saw the distant-signal below this home-signal at danger. When I first saw the light engine I thought it was on the outer road; and it was only when approaching within between 12 and 13 yards of it that I realised that it would foul the road on which I was running, and what was going to happen. I applied the Westinghouse brake with full force, having just been using it slightly for checking the speed. I told my mate to put down sand, but I did not reverse my engine, not having time; I told my mate to put his brake on, but I do not know whether he had time to do so. I think my speed when I came into collision with the other engine was about three or four miles an hour, and the light engine was still, I think, approaching me, and not at rest. I did not whistle; I had shut off steam on coming over the South-Eastern bridge and never re-applied it. When the engines met my right buffer ran into the middle of the buffer-plank of the other engine, and the engines then became buffer locked. After the engines came into collision I pushed the other engine for some distance in front of me, and when the engines came to rest they were still together, my engine being off the road with all its wheels in the six-ft. space between the up and down loop lines. My mate jumped off on the left side just before the engines stopped. I remained on the engine. Neither I nor the fireman was hurt. I saw the yard foreman on the foot-plate of the other engine just before the collision. The rails were very greasy from the fog which had existed in the morning.

5. *Arthur Thomas Semark*, fireman; five years' service, one year and five months fireman.—I have been Read's fireman for about a month, and was with him on the 14th November. My place was on the left side of the engine, which was running chimney in front. I started from Greenwich at 8.40 a.m., and nothing happened on the journey up to Borough Road, and we left there about one minute late. The weather was sufficiently clear for me to see the St. Paul's up stop-signal from about the middle of the South-Eastern bridge, perhaps about a quarter of a mile off, and that signal was off; the next stop-signal on the girder was also off, but the distant signal below it was on. These signals were also visible for about a quarter of a mile. The speed on approaching these last signals was about six miles an hour. I had seen the light engine after passing the outer signals, but thought at first it was on the down loop, and it was only when I got about a carriage length from it, that I realised it was on the road which would foul the up loop. Read then said "Whoa!" and applied his brake, and I opened the sand-valves. I had then time to get a turn on the hand-brake, when the engines met. I think the speed of our engine was about six miles an hour on collision, the light engine being in motion towards us, but at what speed I cannot say. On the collision occurring, we got buffer locked, and pushed the light engine in front of us for two or three lengths, and my engine was thrown off the rails. I jumped off to the left side after the collision, and kept my feet. I did not see or hear anyone on the ground calling my attention to the shunting-engine.

6. *Albert Gribble*, guard; seven years' and seven months' service, five years and four months guard.—I was guard in charge of the 8.40 a.m. train from Greenwich for Holborn on the 14th November. The train consisted of 14 vehicles, including four brake-carriages, and I was riding in the second vehicle from the engine, which vehicle was fitted with the Westinghouse brake, and that brake was also applied

to the vehicle in front of and behind my brake-carriage. I had the means, if I wished, of applying this brake from my compartment. We started from Greenwich punctually at 8.40 a.m., and left Borough Road, which is the last stop before St. Paul's, one minute late. I noticed the signals on approaching St. Paul's junction, and they were all off with the exception of the St. Paul's yard distant-signal, which is below the inner stop-signal. I saw the inner stop-signal, which has the distant signal below it, from about the outer stop-signal, there being a little fog which prevented my seeing it sooner. The speed at the time when I saw this signal, was about seven or eight miles an hour. I did not see the light engine, and the collision took me unawares. I felt the brake go on just before it occurred. The brake pressure had been 75 lbs. when we were running, but I did not notice what it went down to just before the collision. I heard no whistle before the collision. I had just sat down before the collision occurred, and was thrown off my seat on to the floor. The train was full of passengers, but I heard no complaints. The collision occurred about 9.15 a.m. I heard no one shout before the collision.

7. *Henry Dexter*, driver; 37 years' railway service, 28 years driver, and 14 years as such on the London, Chatham, and Dover Railway.—I came on duty at 5.45 a.m. on the 14th November, and would have been relieved about half-past 3. My engine was No. 69, an eight-wheeled tank-engine, with a four-wheeled trailing bogie, and the four leading-wheels coupled. The only brake on the engine was a hand-brake applying to the four coupled wheels. My mate was Henry Whaley, who has been with me about three years. My first work was to take an empty train from Loughborough junction to the Crystal Palace, and I left the Crystal Palace with this train at 8.15 for St. Paul's, where I was due at 8.46, but did not arrive till 8.58 or 8.59, having been detained by signals between Loughborough junction and Blackfriars. I arrived at St. Paul's in No. 3 bay, and after the station work was done an engine came on to the back of the train and took away 10 coaches out of the 15, leaving me with five. I pushed them back into No. 3 "out" road under direction of the yard foreman. After having disposed of the brake in "B" bay, I ran back into No. 3 and took water. The yard foreman then called me back, attached me to the four coaches, which I pulled up towards the station, and then detached them. He then stepped on to the engine and said, "Go ahead," and we went into No. 2 bay. Having got a hand-signal from the signalman, he then said, "Get round the coaches; back them on to some more that are in No. 2, and then right away for Loughborough." The foreman was on the foot-plate on the right side as we were running out of St. Paul's, and we then proceeded on the incoming line, but as the engine was passing the cabin, some observation about the points was made by the yard foreman and signalman, and the yard foreman said, "Right, come on," and I went forward until I got over a pair of points trailing in the direction I was going, and I had all but come to a stand when I said to the yard foreman, "How about it?" The yard foreman then said, "Come on, come on." I then gave the engine a little more steam. In the same breath almost, some one said to me from the direction of the other signal-box, "Whoa, whoa! go back, go back." Whether the regulator was then slightly open or not I cannot say, but on hearing the shouts "Whoa, whoa!" which were repeated by the yard foreman, I reversed the engine, applied steam, and I think the engine was just at a stand when the collision occurred. Upon the yard foreman saying, "Whoa, whoa!" I lost sight of him, but he must have gone round to the bunker end of the engine to try and signal to the driver of the other engine, and he was in that position at the other end of the bunker when the collision occurred. Upon the yard foreman saying "Whoa, whoa!" I looked round and saw the passenger train, and it was not more than four engine lengths off, coming

at a speed not exceeding five miles an hour. Neither the fireman nor I jumped off before the collision, but remained on the foot-plate, and we were not hurt. The right-hand buffer of the passenger train struck the buffer beam of my engine just inside the right buffer, and the engines became buffer-locked, and my engine was driven back some yards. I had never before performed a shunting operation in a similar way to what I was doing on this occasion, and I had only once before made a shunt on the outer road. This was the second shunt that I had ever made at St. Paul's, being principally engaged in the main line traffic. I noticed the signal off for an incoming train, but did not realise that it was off for a train coming in on the line which I should be fouling, and I felt that the operation was in the hands of the shunter. When the yard foreman said, "Come on, come on," I thought he meant me to come over another set of points in order to set back, and I cannot say why he did not stop me when I was going further than was necessary. My engine was running bunker first, and it did not leave the rails. After the collision I found the yard foreman on the bunker end of the engine, between it and the passenger engine. I helped the fireman to extricate him. He seemed to understand what I said. I believe he was perfectly sober when he was on the foot-plate with me. I never thought for a moment that he was the worse for liquor. I am sure the yard foreman never told me to come forward 20 feet, so as to clear the bar.

8. *Henry Whaley*, fireman; seven or eight years' service, about seven years a fireman.—I have been with Dexter about four years and was with him on the 14th November. I worked in with the train due at 8.46 a.m. After the engine had pushed back the carriages into the outgoing road I heard the shunter say go ahead and put the carriages into "B" bay; then we had a signal to come back into No. 3 bay, got water, and having got water the shunter called us back on to the four other coaches, because we had left them foul of No. 59 points, and we pulled them forward two lengths, and having done so, he uncoupled and got on the engine which then came up into No. 2 bay; then he said, "Right out and round them." We went along the incoming road. There were words passed between the yard foreman and the signalman, but I did not hear what they were. We passed onwards and were brought just to a stand when we got clear of the points. Dexter then said, "How about it?" and the foreman said, "Come on, come on." I understood that he meant we were to get right out on the main line. After this some words passed with a fog-signalman on the ground or the signalmen in A box. I did not hear what they were, but immediately after the yard foreman said, "Whoa, whoa! go ahead," (the engine being coal bunker first). As soon as the foreman said this Dexter reversed his engine, I applied my brake and put down sand, looked ahead, and saw the passenger train approaching, and our engine had just come to a stand when the collision occurred. I did not jump and I was not hurt. After the foreman had shouted he ran round to the back of the bunker, held out his hand, and shouted to the incoming train. I shouted, "Come in, you silly fool!" but he remained where he was and was caught by the toolbox of the passenger train engine. I do not think the speed of the passenger train was more than four miles an hour when it struck us. I did not see the signals off for the incoming train as I was inside the cab of the engine, the yard foreman occupying my proper position. I am quite certain the yard foreman was not the worse for drink. I heard no words to the effect, come over the bar or move forward 20 feet.

9. *Henry John Griffiths*, yard foreman at St. Paul's; 21 years' service; three and a half years yard foreman at St. Paul's; before this shunter at Holborn Viaduct about 15 years.—I commenced work at 7.30 a.m. on November 14 to remain till 7.30 p.m. I remember the 8.15 a.m. train from the Crystal

Palace due at 8.46 a.m. arriving about 9 a.m. The weather was at this time foggy, but it was possible to see from the buffer-stops as far as signal cabin B. I took charge of the Crystal Palace train after it had discharged its passengers, I first got an engine to the Crystal Palace end of the train, which took away 10 vehicles, out of the 15 of which the train had consisted, as an empty train to Greenwich. The train had arrived on No. 3 bay, and after the departure of the rear part of the train for Greenwich I had the train engine and the five remaining vehicles backed out along No. 3 bay line on to the main out road to clear B bay, and this having been done, I had the engine and the vehicle next it cut off from the other four, brought them back into No. 3, and then through a cross-over road into B bay; then dropped the vehicle in B bay and came into No. 2 bay, being now bunker first towards Blackfriars; I wanted to get it to the front of the four vehicles which had been left standing on the main "out" road, and to do this the engine had to run beyond No. 59 points and set back through them towards the station. As soon as the train had come in I had told Dexter I wanted to get the engine to the back of part of the train, an operation which takes place when the engine which ought to take the train to Loughborough (where the four carriages were to go) is not at hand. When the engine started to proceed towards No. 59 points it was at about the end of the platform for No. 2 bay, I was on the step of the engine on the right-hand side as it was running (i.e., on the side next the signal cabin) and I said to the driver that we wanted to run round the four coaches which he was to take with some others (from a Greenwich train due at 10.4), to Loughborough as an empty train. The driver and fireman and myself were the only men on the engine which started when I said, "Right," went forward, and almost stopped on the bar for No. 59 points. Seeing this, I said, "Come on, come on!" my intention being to get the engine off the bar, so that the signalman might be able to move the points. The driver then gave the engine steam, and though I said to him, "Whoa!" when he had cleared the bar, though he shut off steam at once and the fireman applied the hand-brake, the engine moved forward and fouled the crossing of the "in" loop line and the "in" through line, and had just stopped dead before the collision occurred. I had not seen the signal off for the Greenwich train, which I knew was due, but

I saw the engine of the train when it came round the curve, about 30 yards or 40 yards off. When I saw the other engine close at hand I went round by the end of the bunker to get to the other side of my engine, hoping thereby to escape, but before I could get round the buffer beam of the Greenwich engine caught my left leg and smashed it and the knee. I held on to the bunker till Dexter and Whaley came and helped me. I thought I had a better chance of escaping the way I tried than by going through the foot-plate, as Dexter was working at the reversing wheel and blocking the way. When I said, "Come on, come on!" I did not tell Dexter why I wanted him to come on. I could not say whether or not Dexter had run round a train in this way before, nor had I told him when starting from the end of the platform which points I intended to go back through, concluding that he knew. I do not recollect my attention being called away to anything else after saying to Dexter "Come on, come on!" I am still on the sick list. My leg has been amputated above the knee.

10. *William East*, platelayer; five years' service, platelayer all the time.—I was employed fog signalling on the morning of the 14th November at 7 a.m. at St. Paul's junction, near the signal cabin A., attending to incoming trains. I was still fog signalling when the collision occurred, although the fog had then lifted. I used no fog signals for the Greenwich train, as the stop-signal was off for it, and although the distant-signal was on, the weather was then clear enough to see a quarter of a mile. I saw the light engine approaching the junction, and thinking it was coming too far, I hollowed out to the yard foreman at the same time that I heard the signalman shout, the yard foreman being at this time on the side of the engine shouting to them to stop. I could not say whether the light engine had stopped dead before the collision. When I saw a collision likely to occur, I ran towards the Greenwich train with a red flag, and had got about 10 or 20 yards from the place of collision when the engine passed me going as fast as I could run, before which I had heard the Westinghouse brake being applied. I did not notice whether the wheels were skidding when the engine passed me. When I first shouted at the light engine it was 20 yards from the place of collision, just passing under the girder. The rails were greasy that morning from the fog.

Conclusion.

This collision between a passenger train and a shunting engine was mainly brought about by want of care on the part of yard foreman Griffiths in charge of the shunting engine. This engine had brought in a train from the Crystal Palace a short time before the collision, and after the performance of several shunts under Griffiths' directions it became necessary for it to proceed through a pair of points (No. 59), worked from the station signal cabin A. and then to set back through these points on to some of the carriages which had formed its train. Griffiths, by permission of Finch, the cabin A. signalman, accordingly instructed Dexter, the driver of the shunting engine, to proceed towards the points, which Dexter did, Griffiths standing on the footstep of the engine. On reaching the points Griffiths, under the impression that Dexter would stop on the lifting bar connected with them, said "Come on, come on!" intending him to move ahead just sufficiently to clear the bar. Dexter, however, who was not well acquainted with the arrangements of St. Paul's station, thought Griffiths intended him to move forward to some other points, and accordingly gave his engine more steam than was necessary merely to clear the lifting bar. On finding that the engine was going ahead further than he had intended, Griffiths shouted to Dexter to stop, but the latter had only succeeded in doing so (after proceeding about 80 yards beyond No. 59 points) when his engine was foul of the junction, just as the engine of the up Greenwich train was passing it at a speed of about eight miles an hour.

The right leading buffer of the engine of the Greenwich train struck about the centre of the trailing buffer-beam of the shunting engine, pushed it before it for about 19 yards, being itself off the rails with all its wheels.

It was extraordinary want of common prudence on the part of Griffiths to use the words "Come on, come on!" instead of simply telling Dexter to clear the lifting bar, and Griffiths could then not have been attending to what Dexter did in consequence of the words he had used, or he could have made him stop in ample time to avoid fouling the junction, to do which the engine had to travel nearly 80 yards from the points. Griffiths had not observed that the signal was off for the Greenwich train to approach, but on catching sight of the engine of the train he endeavoured to escape from the consequences of the collision which he saw was imminent by making his way to the other side of the shunting engine round by the coal bunker (which was in front) rather than by crossing the foot-plate which he saw was blocked by the driver and fireman. His left leg was, however, caught and crushed between the tool-box on the buffer-beam of the other engine and the bunker of the shunting engine.

Griffiths has been 21 years in the service, and for the last $3\frac{1}{2}$ years has been yard foreman at St. Paul's station. He had been on duty about $1\frac{1}{2}$ hours when the collision occurred. There was not the least suspicion that he was the worse for liquor.

Dexter, the driver of the shunting engine, though 14 years a driver in the Company's service, had only on one previous occasion made a shunt at St. Paul's station, and then upon a different line to that on which he was running in the present instance. Upon Griffiths saying to him, "Come on, come on!" Dexter declares that he was under the impression that Griffiths meant him to go forward to some other points, and not merely to clear the lifting-bar of those upon which he had merely come to a stand, that he accordingly gave his engine a little steam, and though he noticed a signal off for an incoming train, he did not at all realise that it applied to the line towards the junction of which he was closely approaching; that on hearing the shouts, "Whoa, whoa!" almost immediately after he had given his engine a little steam, he reversed his engine and applied steam, the fireman putting on the hand-brake, and opened the sand-boxes, the result being that his engine had just stopped when the collision occurred.

Dexter was trusting, I think, too implicitly to what he fancied were Griffiths' directions, and was not using the caution to be expected from an intelligent driver, such as he appeared to be. On seeing the signal off for an incoming train when he was approaching what he must have known to be an important junction, he should at least have called Griffiths' attention to the signal and asked what it meant before proceeding beyond the points where he had nearly stopped. On these considerations I must attach a certain amount of blame to Dexter; he had been on duty $3\frac{1}{2}$ hours when the collision occurred.

The evidence of Dexter's fireman corroborates that of Dexter. He appears to have done his duty as regards putting on the hand-brake of the engine and applying sand when the alarm was given.

The driver, fireman, and guards of the passenger train are in no wise to blame.

The driver was approaching the junction with the signals all off for it, and although he had seen the shunting engine for some distance back, it was only when within some 12 or 13 yards of it that he realised that it would foul the road on which he was running. Steam had been shut off about quarter of a mile back, and he had time only to put on the Westinghouse brake (which applied to the four coupled wheels of the engine and to the three front vehicles out of the 14 of which the train was composed) with full force before collision. He estimates the speed on collision at three or four miles an hour, (it was probably at least double that,) his engine becoming locked with the shunting engine, being thrown off the rails, and stopping after the two engines had run together for about 19 yards.

The fireman had time only to open the sand valves and get a turn at the hand-brake.

The guards were taken completely unawares by the collision.

The signalman in cabin A is in no way responsible for the collision; when seeing that it was imminent, owing to the shunting engine approaching too close to the junction, he did what he could to stop it by shouting to the yard foreman, who was on the foot-plate. He also threw up the home and distant signals which he had taken off to admit the Greenwich train, but not before it had passed the home-signal.

Richards, the signalman in cabin B, gave the yard foreman permission to take the shunting engine as far as No. 59 points, and says that he watched the engine, and when he thought it had come to a stand at those points he lowered the home-signal on the bridge for the Greenwich train, which he says he would not have done had he seen the engine still in motion forward. Directly after this he saw the engine moving forward, but instead of at once throwing back the bridge-signal to danger, he tried to call the attention of cabin A signalman, until he saw that he was already trying to prevent the collision, and after this he had no time to get to the signal lever before the collision.

Richards ought to have assured himself that the shunting engine had really stopped before lowering the home-signal for the Greenwich train, whereas I believe he must have lowered this signal while the engine was still in motion towards No. 59 points, and then when he saw what was likely to occur his first object should have been to throw back the home-signal to danger. In these respects he is not free from blame. He has been a signalman $20\frac{1}{2}$ years, and had been on duty $2\frac{1}{4}$ hours when the collision occurred.

It would, I think, be well to give the signalman in cabin A control over the home-signal (No. 77) worked from cabin B, as the signalman in cabin A might (as in the present instance) be sooner aware of the necessity of throwing this signal to danger than the signalman in cabin B.

The Assistant Secretary,
Railway Department, Board of Trade.

I have, &c.,
C. S. HUTCHINSON,
Major General, R.E.

APPENDIX.

DAMAGE TO ROLLING STOCK.

Description.	Nature of Damage.
Engine, No. 69 - - -	Buffer-plate and angle-iron destroyed. End of framing damaged.
Engine, No. 87 - - -	Buffer-plate and plank and two tool-boxes destroyed.
Second-class carriage, No. 110	Side and end panels broken, pillars and stanchion broken, step-board damaged, Westinghouse air-pipe broken, seat broken down, and one buffer bent.
Second-class carriage, No. 103	One buffer broken and three bent; step-board and side and end panels damaged; corner pillar broken, and draw-bar bent.

Printed copies of the above report were sent to the Company on the 15th March.

MANCHESTER, SHEFFIELD, AND LINCOLNSHIRE RAILWAY.

Board of Trade (Railway Department),
1, Whitehall, London, S.W.,
25th September 1889.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 2nd instant, the result of my inquiry into the causes of a collision which occurred on the 1st instant at Sheffield station on the Manchester, Sheffield, and Lincolnshire Railway.

In this case the 9.25 p.m. down train from Rotherham to Sheffield (consisting of engine and tender, brake-van, two third-class, one first-class, one second-class, and three third-class carriages, and one third-class brake-carriage) when approaching Sheffield at about 9.53 p.m., ran into the tail of a special fish train which had been standing for about two minutes at the down home-signal worked from Sheffield east or No. 6 signal-box, and had just started forward to run through the station.

The brake-van of the fish train and one waggon were thrown off, but none of the vehicles in the passenger train left the rails.

Five passengers are returned as having been injured.

The particulars of the damages to the rolling-stock are given in the Appendix.

Description.

About 55 yards east of the down platform at Sheffield is the east or No. 6 signal-box, from which the goods line junctions are worked, and 328 yards east of No. 6 is No. 8 signal-box.

The next block signal-box is Woodburn junction, 1,290 yards east of No. 8.

The only signals to which it is necessary to refer are—

No. 8 down home-signal, 33 yards east of the signal-box, upon the same post as No. 6 down distant-signal.

No. 6 down home-signal, 153 yards east of the signal-box.

No. 6 junction signals, a bracket post with six arms, 98 yards east of the signal-box.

The left-hand pair of signals on the bracket are for No. 2 dock line above, and No. 1 dock line below; the centre pair are for down main line above, and down main line distant from No. 5 box below; and the right-hand pair are signals for the goods line.

The point of collision was on the down main line, 100 yards east of these junction signals, and 130 yards west of No. 8 box.

The line is on a curve between No. 8 box and the point of collision, and there are sidings upon both sides of the line.

The line falls from the east from Woodburn junction nearly to No. 8 signal-box on a gradient of 1 in 144, but is level from No. 8 box through the station.

The line is worked upon the absolute block system as far as No. 8 box, but between No. 8 and No. 6 boxes, and from No. 6 through the station, there is no block in force.

Extracts from the instructions for working in No. 8 box are given in the Appendix.

There is a disc in No. 8 box working with No. 6 box down distant-signal, and when this disc is not turned, the signalman in No. 8 box should keep his distant and home signals at danger, and should not lower the latter for a train or engine until it has been brought to a stand, when, if the line is clear as far as No. 6 box home-signal, he may lower the signal.

The signalman in No. 8 box must not give permission for a passenger train to leave Woodburn junction unless the line is clear between his box and No. 6 box down home-signal.

There is telephonic communication between the two boxes.

The junction signals at No. 6 box can be plainly seen from an approaching down train for at least 700 yards, and the home-signal for No. 8 box for about 1,000 yards.

Evidence.

Richard Truswell states: I have been nearly 15 years in the service of the Manchester, Sheffield, and Lincolnshire Railway Company, and one year a driver. On the 1st of September I came on duty at Retford at 8 p.m. My engine is No. 403. It is a six-wheeled engine, the driving and leading wheels being coupled. My engine was attached to a special fish train for Manchester, and we left Retford (G. N.) at 8.35 p.m. We were stopped by signals at Whisker Hill, Checkerhouse, Shireoaks, and Woodhouse. The Woodburn junction signals were right for me. The home-signal at Sheffield No. 8 box was lowered as I approached it. On approaching No. 6 box the indicating and home signals were off for the back of the station, but I did not proceed as I wanted to go to the passenger station platform, having received orders at Retford from the guard to go through the station. We stood at No. 6 box signal about three minutes, after which I whistled again, and the signals for me to proceed to the station platform were lowered. I had just started when I was run into at the rear. I did not feel much of the force of the collision on the footplate. It was a clear night and the signals could be well seen. No. 6 box distant-signal was not off when I passed it. I do not know whether it was lowered after I passed it or not. My train consisted of six vehicles and a brake-van. I heard no whistling by the driver of the passenger train.

John Hall states: I have been 19½ years in the service of the Manchester, Sheffield, and Lincolnshire Railway Company, and two years a goods guard. On the 1st September I came on duty at 8.10 in the evening. I was guard of a special fish train from Retford to Manchester. It consisted of six loaded fish vans and a brake, in which I was riding. I told the driver at Retford that he would have to whistle for the station platform at Sheffield, as we had 43 boxes of fish to put out there. As we were approaching No. 6 box the signalman pulled off the signals for the back of the station, but the driver whistled for through the station. He had previously whistled to go in that direction before arriving at No. 8 box. The signalman put the signal for the back of the platform to danger

after we had been standing about three minutes. After the proper signals had been lowered, and as soon as the driver started my train, I saw the passenger train just as it was passing No. 8 box home-signal, and I opened my van door and jumped out. I could see the train quite plainly. My two side and tail lamps were properly lighted: the side lamps were at the front end of the van and the tail lamp at the rear end; they were all three burning properly. I thought the following train was coming too sharp. I did not see what steps were taken to stop the passenger train running into my train, which it did at a speed of about 10 to 12 miles an hour. Steam was off at the time. I cannot say whether the brakes were on or off. I did not hear any whistling from the engine. I could not say whether the driver of the passenger train saw us or not before my train was struck. The brake-van and a covered goods waggon in my train were knocked off the road. The covered goods waggon was the second vehicle from the engine. None of the vehicles of the passenger train left the rails. It was a clear night.

Thomas H. Millington states: I have been 20 years in the service of the Manchester, Sheffield, and Lincolnshire Railway Company, and 15 years a driver. On the 1st September I came on duty at 4 o'clock in the afternoon. My engine is No. 87. It is a six-wheeled engine (the driving and trailing wheels being coupled), and a six-wheeled tender fitted with the automatic vacuum brake working blocks on the four coupled engine wheels and the six wheels of the tender. My first trip was with the 5.20 train, Sheffield to Rotherham, and I worked back to Sheffield with the 5.50 train. I afterwards went from Sheffield to Mexboro' at 7 o'clock, Mexboro to Sheffield at 7.55, Sheffield to Rotherham at 9 o'clock, and back from Rotherham at 9.25. This train was the one which came into collision with the fish train. My train consisted of two brake-vans and seven passenger carriages. Five of these and the two brake-vans were fitted with the automatic brake, and the two other vehicles had through brake-pipes. My brake was in good order and acted very well. I believe we

left Rotherham five minutes late. We stopped at Tinsley, Broughton Lane, and Attercliffe. I used my brake to stop the train at those places, and it acted all right. After leaving Attercliffe the next signals were at Attercliffe junction; they were all right, so were those at Woodburn junction. On approaching No. 8 box at Sheffield, the distant-signal was on, and the home-signal was off when I came in sight of it. It was off all the time. No. 6 box distant-signal, which is the lower arm on No. 8 home-signal post, was at danger. The junction indicating signal for No. 6 box and the home-signal were off for running through the station when I first sighted them. I could see them for a distance of about a quarter of a mile outside the distant-signal. I did not see these signals lowered. When I first sighted them I was running at a speed of about 15 miles an hour with steam off. I shut off steam as I passed Woodburn junction, and had reduced speed somewhat on account of the distant-signal being at danger. I reduced speed to about 12 miles an hour. My brakes were slightly on when I first sighted the home-signals. I had applied them for No. 8 box distant-signal, and when I saw the home-signals were off I released the brake. I applied it again just before the collision occurred. I saw the lights on the brake-van of the fish train some distance before I reached it, but I did not know that it was standing on my line, it was very difficult to see coming round the curves. I saw the lights of the brake-van before I passed the distant-signal for No. 6 box, but I thought it was in the siding. I should not be more than 50 yards from the van when I discovered it was on my line. I was running at a speed of about 10 miles an hour at the time. I reversed my engine, applied the brakes, and put sand on the rails. The brakes acted very well. We struck the other train at a speed of about seven or eight miles an hour. No damage was done to my train except the breaking of a screw shackle between the front brake and the next coach. Neither my mate nor myself were injured. It was a clear night and I could see the signals for a long distance. I am quite sure that No. 6 box signals were off when I first sighted them. I think the fish train was not in motion when my engine struck it.

George Jinnever states: I have been about 15 years in the service of the Manchester, Sheffield, and Lincolnshire Railway, and 14 years a fireman. I have heard my driver's evidence read over and it is quite correct.

Charles Dalby states: I have been 24 years in the service of the Manchester, Sheffield, and Lincolnshire Railway Company, and 16 years a guard. On the 1st of September I came on duty at 3.55 p.m. I was guard of the 9.25 p.m. passenger train from Rotherham to Sheffield, which consisted of engine and tender (running engine first), brake-van, two third-class, one first-class, one second-class, three third-class, and one first-class carriage brake (nine vehicles in all). The two third-class carriages next to the leading brake-van had through brake pipes. The remainder of the train (which consisted of six-wheeled stock) was fitted with the automatic vacuum brake. I was riding in the brake compartment of the rear vehicle. I had no warning of the collision with the fish train except the sudden application of the brake on approaching No. 6 home-signals. The brake held well. I cannot exactly fix the point where it was applied violently. The collision occurred very soon after the brake was applied. I should think about a quarter of a minute afterwards, but I cannot say how far we ran after its application. There was no rebound after the collision. We should be running about 10 miles an hour when the brake was applied. The speed was considerably reduced when we struck the fish train. The distant-signal for No. 8 box was on when I passed it. I looked out for the other signals and the home-signal for No. 8 box was off. The distant for No. 6 box was on, and the indicating and home signals were off. I first saw the latter signals fully

100 yards beyond the home-signal for No. 8 box. These signals were then off, but I did not notice them actually lowered. The top centre arm on the six-armed bracket post was off for my train to go through the station. I did not see the lights on the fish train before we struck it. It was a fine night. My train was well filled with passengers, but none of them complained to me of having received any injuries. I made no inquiries of the passengers, but after looking round my train I went back to protect it. None of the vehicles of my train left the rails.

Thomas Brumby states: I have been about 10 years in the service of the Manchester, Sheffield, and Lincolnshire Railway Company, and about 5½ years a signalman. I have been employed in Sheffield No. 8 box nearly 5 years. On the 1st of September I came on duty at 5.0 p.m. until 6.0 a.m. (13 hours), being my Sunday turn of duty. There are 14 levers in the box and two block instruments. I work the ordinary block to Woodburn junction. There is no block between my box and No. 6 box for either up or down trains. I give the "Be ready" and "On line" signals and they are acknowledged by being repeated. I produce a copy of the printed instructions which I work to. There is telephonic communication between my box and No. 6 box. The special fish train passed my box at 9.50, having been signalled to me in the usual way from Woodburn junction. As soon as I got "On line" from Woodburn junction I passed the "Be ready" to No. 6 box. My distant-signal was not lowered for the fish train, but my home-signal was when the train had slackened speed. The distant-signal for No. 6 box was on, the down home-signal for No. 6 box and the junction signal for the back of the station were lowered for the train. I had received the "Be ready" signal for the fish train at 9.47. The instructions are not to pass on the "Be ready" signal for a goods train until I receive it "On line" from Woodburn junction. When the fish train was approaching, the disc in my box worked from No. 6 box was on; I therefore kept my down distant and home signals at danger until the train had slackened speed. The disc was never taken off. It is not the custom to bring trains to a dead stand, although this is the order. It is the usual practice to keep the signals at danger until the speed of the trains is reduced. As the train passed my box the driver whistled for the station signals. I could not see whether it stopped at No. 6 box signals or not. I saw the signal for the back of the station put to danger, but I did not see the signal for the station lowered for the fish train, although I looked. I thought the train had passed this signal before it was put to danger and gone round the back road. I looked along the line to see if there was any obstruction on it, but I could see none. I asked no question of the signalman at No. 6 box by means of the telephone. This train passed me at 9.50. I cannot say how long it was after the train passed that the signal for the back line was put to danger. I got "Be ready" for the passenger train from Woodburn junction at 9.50 and "On line" at the same time. I accepted them and passed the signals forward at once. I kept my distant-signal at danger for the passenger train, and my home-signal as well until the passenger train had been brought under control. I did this because the disc in my box, worked from No. 6 box, was on. I am quite certain that I kept my home-signal at danger until the engine of the passenger train was within 150 yards of it, and I then lowered it. The train passed my box at a speed of about seven or eight miles an hour. I noticed the home and junction signals for the station at No. 6 box lowered at about the time the passenger train was approaching my box. This would be directly after I had lowered my home-signal. I heard the collision take place. After the collision I could not see anything but the rear of the passenger train. The place where the collision occurred was not within my view, as it was obstructed by a ballast brake-van standing upon the up ballast

siding near the engineer's shop and between my box and the point of collision. The only way in which I judge whether there is any obstruction between my box and No. 6 down home-signal is by looking along the line, and when my view is obstructed, as in this case, we judge by the signals. We never inquire by telephone. I am quite sure that the train was within 150 yards of my box when I lowered the signal. I think my home-signal can be seen from Woodburn junction.

John Smith states: I have been 14 years in the service of the Manchester, Sheffield, and Lincolnshire Railway Company, nearly all the time a signalman. I have been employed in No. 6 box, Sheffield, 2½ years. On the 1st of September I came on duty at 5.0 p.m., until 6.0 a.m. the following day. This was the Sunday duty turn, the ordinary turn being eight hours. There are 66 levers in the box. We do not book trains, neither do we work block either way. We have telephonic communication with Nos. 5, 6, 7, and 8 boxes, and with Woodburn junction. I got a signal for the fish train at 9.47, which I acknowledged by repeating it. All my signals were then at danger. I lowered my home and directing signals for the back of the station as the train was passing No. 8 box. The driver then whistled for through the station, and I let him come to a stand before I reversed my signals. He came to a stand, and whistled again for through the station. I could not then lower my signals for him, as I had a passenger train standing at the down platform. My disc for No. 8 box was not pulled off. The fish train stood about two minutes waiting for the station signals before I lowered them. The collision occurred about one minute after this, the fish train having started and moved forward a little distance.

At this time my distant-signal was at danger and my home and directing signals were off for through the station. I got the "Be ready" signal for the passenger train at 9.51, and immediately afterwards the "On line" signal. I acknowledged these signals by repeating them. I knew at this time that the fish train was standing at my home-signal, but I did not think to inform the signalman at No. 8 box of this. My distant-signal was not lowered nor was my disc taken off. I know that according to the Company's regulations the signalman at No. 8 box should not accept a passenger train from Woodburn junction while a train is standing at my home-signal, but at the time I received the "On line" signal for this passenger train it did not occur to me that there must have been a breach of the regulations. I was busy at the time getting the passenger train at the platform shunted and the fish train into the station. If it had occurred to me I might have warned the signalman at No. 8 box by means of the telephone. I did not see his home signal lowered for the passenger train. It is not the custom of the signalman in No. 8 box to ask if there is any thing standing at my home-signal. I have not known this to be done previously to last night (Thursday, September 20th). We have not had telephones long, probably about six months. I think the collision took place at 9.53. I did not hear any whistling for the station signals from the fish train before it got to No. 8 box. When I first saw the passenger train it was close to the rear of the fish train. At this time I was in the act of placing the junction home-signal to danger. When I received the "On line" signal for the passenger train from No. 8 box I did not know its whereabouts. I expected it was passing Woodburn junction. It is the instruction to give "On line" signal when passenger trains are passing that point.

Conclusion.

From the foregoing evidence it appears that the special fish train, which left Retford at 8.35 p.m., passed Sheffield No. 8 box at about 9.50 p.m., the distant-signal having been at danger and the home-signal having been lowered as the train approached it; that it came to a stand at the junction signals worked from No. 6 box, because the signal for running on to the goods line at the back of the station was lowered for it, instead of the main line signal for going into the passenger station, where it had to stop to put off some fish boxes; that it stood for two or three minutes before the proper signal was lowered; and that just after it had started it was run into by a following train, the 9.25 p.m. down passenger train from Rotherham. The "Be ready" signal for this train was given from Woodburn junction at 9.50, and it was accepted by the signalman in No. 8 box, although the fish train was at that time approaching or standing at No. 6 box junction signals, and with the tail of the train outside No. 6 box down home-signal. As the passenger train approached No. 8 box the down distant-signal was at danger, but the home-signal was lowered before the driver came in sight of it, according to his evidence, but not until the engine was within 150 yards of it, according to the evidence of the signalman in No. 8 box. The driver states that the proper signals for running into the station, worked from No. 6 box, were off for him, and no doubt this was so, but they were lowered for the fish train and not for his train. He passed No. 8 box at a speed of about 12 miles an hour, with steam off and the brakes off, and although he had seen the tail lights on the brake-van of the fish train before he passed No. 8 box home-signal, more than 160 yards distant from them, he did not realise that they were upon the line upon which he was running until within 50 yards of them, or probably rather less. He then appears to have done all that he could to stop, making use of the continuous brake working upon the engine and tender and seven out of the nine vehicles in the train, reversing the engine, and applying sand to the rails, but he was still running at a speed of seven or eight miles an hour when he struck the brake-van of the fish train.

The person immediately responsible for this collision is the signalman in No. 8 signal-box, for he broke the rules in accepting the passenger train from Woodburn junction when the fish train was between him and No. 6 box home-signal. He also failed to carry out the rule which enjoins that trains must be stopped at his home-signal when the disc in his box, worked from No. 6 box, is not turned, for neither the fish train nor the passenger train was stopped, although the disc was not turned, and if

the evidence of the driver of the latter train be correct, the home-signal was actually lowered before the train was within sight. So far as this breach of rules is concerned this signalman is not singular, for in a great number of similar cases which have come under my notice, signalmen seem to consider that it is quite sufficient to check trains without actually stopping them. Such a common practice cannot pass unnoticed by the officials, and it would be better to modify the rule than to leave it as it is and not enforce it.

In excuse for accepting the passenger train the signalman states that, seeing the junction signal for the goods line off for the fish train, and then put to danger, he thought that this train had gone forward upon the goods line, and had passed No. 6 box, so that when the main line signal was lowered he assumed, as did the driver that it was for the passenger train. If, however, he had given the matter a thought he would have known that, as he accepted the passenger train less than a minute after the fish train had passed his box, this could not have been the case, and if he had any doubt about the matter he might have inquired upon the telephone where the fish train was. The view of the line seems to have been obstructed by vehicles upon a siding, so that he states he could not see the tail lights on the fish train, but this being so he should have been all the more careful to inquire.

This man had at the time been on duty for nearly five hours.

The signalman in No. 6 box might, and probably would if he had been smart, have averted the collision, for he knew that the fish train was standing at his signals when the signalman in No. 8 box passed on to him the "On line" signal for the passenger train, received from Woodburn junction, and he should have known that under the circumstances the passenger train ought not to have been accepted. This man did not break any rule, and he was occupied in other work—getting the line in the station clear for the fish train to run in—so there is some excuse for his omission to notice the mistake made in No. 8 box. Above all, however, the collision was due to the absence of proper block working between No. 8 and No. 6 boxes, and the sooner that this mode of working is adopted the better it will be both for the Company and the public.

I do not think the driver of the passenger train is to be blamed, for he was running with the proper signals off, and owing to the curves on the line it was very easy to be misled as the position of the tail lights on the fish train.

I have, &c.,
The Assistant Secretary, F. A. MARINDIN,
Railway Department, Board of Trade. Major, R.E.

APPENDIX.

MANCHESTER, SHEFFIELD, AND LINCOLNSHIRE RAILWAY.—PARTICULARS OF DAMAGE TO STOCK AT SHEFFIELD.

Locomotive and Carriage and Waggon Department,
Gorton, September 2nd, 1889.

PARTICULARS OF DAMAGE TO STOCK through slight COLLISION at SHEFFIELD, September 1st.

No. of Stock.	Description.	Owning Company.	Particulars of Damage.
87	Engine	M. S. & L.	Both buffers broken and front of engine damaged.
403	Engine	M. S. & L.	Vacuum pipe bent, and L. H. buffer-guide broken.
223	Fish truck	M. R.	One buffer rod bent, and one broken, 2 buffer-castings, vacuum pipes, one headstock, and one screw coupling broken and end and side broken.
406	Fish truck	L. & N. W.	End and side broken.
480	Fish truck	L. & N. W.	One buffer-rod pushed up, one longitudinal split, and one top end rail broken.
508	Fish truck	L. & N. W.	One buffer-rod bent, two end pillars broken, and one axle-guard wide.
579	Fish truck	L. & N. W.	One axle-guard broken, one end and side broken and one buffer-rod bent.
9514	Goods brake	M. S. & L.	Buffer-rods bent, and casting pushed through headstock.
594	Dummy	M. S. & L.	One headstock, steps, step irons, one axle-box, two axle-guards, and one drawbar broken.
201	Third	M. S. & L.	One screw coupling broken.
503	Passenger brake	M. S. & L.	One side chain broken.

Instructions to be observed by the Signaller on duty at No. 8 Signal Box, Sheffield.

1. Permission must be given on the block telegraph for a down passenger train to approach when any obstruction exists on the down line at your box, or east of the down home-signal worked from No. 6 box; and, after permission has been given for a down passenger train to approach, no obstruction of the line on which such train is about to run must be allowed until the train has passed, or been brought to a stand, or the signal has been withdrawn by the signaller in the rear.

2. When a passenger train is on the down line at your box or east of the down home-signal worked from No. 6 box, permission must not be given on the

block telegraph for any train or engine to approach on that line, and after permission has been given for a down train or engine to approach, no passenger train must be allowed to foul the down line until the train or engine has passed or been brought to a stand or the signal has been withdrawn by the signaller in the rear.

3. When the disc signal fixed in your box and worked from No. 6 box is at "Danger," you must keep your down distant and down home-signals at "Danger" until the approaching train or engine has been brought to a stand at your home-signal, then, if the line is clear at your box and between your box and the down home-signal for No. 6 box, you may lower your home-signal and allow the train or engine, to pass.

Printed copies of the above report were sent to the Company on the 12th October.

MIDLAND RAILWAY.

Board of Trade, (Railway Department),
1, Whitehall, London, S.W.,
31st August 1889.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 9th instant, the result of my inquiry into the causes of a collision which occurred on the 2nd instant at Sheffield station on the Bedford and Hitchin section of the Midland Railway.

In this case a special up goods train from Bedford, consisting of engine and tender, 26 loaded waggons and brake-van in rear, overran the signals at Sheffield station, and came into collision with the engine of the 2.58 p.m. down mixed train from Hitchin, which was at the time across the up line, in the act of attaching a waggon of pigs on the siding. Four passenger vehicles were clear upon the siding attached to the engine when the collision took place, and the brake-van of the train attached to one goods waggon was standing back upon the down line clear of the crossing. The trailing-wheels of the passenger engine left the rails, the waggon of pigs attached to the rear of the passenger carriages, and the trailing end of the rear carriage were driven back on to the carriage dock, and the rear bogie-wheels of the second passenger carriage from the engine were also thrown off the rails.

In the goods train only the engine-wheels left the rails.

Five passengers complained of injury, but two of these have not as yet made any claim for compensation.

The engine, three carriages, and one goods waggon in the passenger train, and the engine of the goods train were damaged. (For particulars see Appendix.) The collision took place at about 3.15 p.m.

Description.

Sheffield is an ordinary roadside station upon a double line running from north to south, with a goods yard at the east or up side of the line, south of the station. There is a through road leading from the goods yard to the down line, on which there are trailing points, and it was on the crossing of this through road and the up line that the collision took place. There are home and distant signals in both directions.

The up home-signal is 180 yards north of the point of collision, and can be seen from an approaching engine for about 900 yards, and the up distant-signal is 900 yards outside the home-signal, and can be seen for 460 yards.

The line is straight through the station and is approached from the north upon an easy curve to the east. The gradient is a falling one of 1 in 120 towards Sheffield from the north for a distance of over $1\frac{1}{4}$ miles.

The points and signals at Sheffield are not interlocked, and the points are worked from the ground. Block-working is not in force.

Evidence.

Fred Watkins, station-master, states: I have been in the service 12 years, station-master nine years, at Shefford two years. On August 2nd I came on duty about 7.25 a.m. I left duty the previous night about 8 o'clock. The 2.58 p.m. passenger train from Hitchin to Bedford arrived at Shefford at 3.12 p.m. and we required to attach a waggon-load of pigs from the up side of the line, in the rear of the passenger vehicles, and in front of one waggon and a passenger van which was in the rear of the passenger vehicles. The train was brought to a stand at the platform and before crossing the up main line to attach the waggon of pigs the two rear vehicles were shunted back on the down main line to the south side of the crossing. The passenger train was then taken into the goods yard for the waggon of pigs to be attached, and I held the hand-points in the down main line to turn the train into the goods sidings. As the train was backing across the up line I heard an engine whistle, which I thought was the engine of an up train whistling in consequence of the distant-signal being at danger. As soon as the engine of the passenger train had passed me towards the goods yard, I looked towards the passenger train to take care that it was entering the yard cautiously. I then turned round and saw the engine of the up goods train passing between the platforms, and I was satisfied that the train would be unable to stop before reaching the crossing upon which the passenger train was standing. I therefore requested the driver and fireman of the passenger train to leave their engine, and they did so, and shortly afterwards the collision took place on the angle crossing in the up main line. The right-hand buffer of each engine struck the buffer-plank of the other engine. The trailing-wheels of the passenger engine left the rails. The force of the collision caused the passenger carriages to move further into the goods yard, and the waggon of pigs that had been attached in the goods yard was forced on to the carriage dock, as well as the rear end of the bogie-brake carriage. No other vehicle of the passenger train left the rails. All six wheels of the goods engine left the rails, but the tender, the 26 waggons, and the guard's brake, remained on the rails, and, so far as I know, no damage was done to any vehicle on the goods train except the engine. Before the passenger train crossed from the down line over the up line into the sidings, I took care that all the signals were at danger for protecting the operation. The signals were still at danger when the collision took place. The speed of the goods train at the time of the collision was about five miles an hour. When I saw the goods train approaching I could not tell the passenger train driver to set back clear of the up line as there was no room on the sidings, the waggon of pigs being right against the dead end. Block-working is not in force between Shefford and Southill, the next station towards Bedford. The goods train driver was sounding his whistle. His brakes were on. He had 26 vehicles in his train. I cannot say whether he sanded the rails or not. None of the passengers' injuries were serious. I know the driver of the goods train. He has been regularly working on this line. I do not remember a previous case of his over-running signal.

William Rush states: I have been in the service 16 years, a driver about 3½ years, and accustomed to run between Bedford and Hitchin a little more than a year. On August 2nd I came on duty at 6.25 a.m. to work the 7.15 a.m. passenger train from Hitchin to Bedford, the 8.30 a.m. passenger train, Bedford to Northampton; 9.45 a.m. passenger train, Northampton to Bedford; 12.29 p.m. passenger train Bedford to Hitchin; 2.58 p.m. passenger train Hitchin to Bedford; 5.6 passenger train Bedford to Hitchin; 6.8 p.m. passenger train Hitchin to Bedford; and the 6.32 p.m. passenger train Bedford to Hitchin,

due to arrive at Hitchin at 8.15 p.m. On August 1st I went off duty at 9.5 p.m., having worked the same set of trains I prepared to work on August 2nd. I work these trains four days each week, the other two week days I am off duty, and I do not work at all on Sundays. I left Hitchin on August 2nd at 2.58 p.m., right time. My train consisted of engine 194, driving and trailing-wheels coupled, and six-wheeled tender, running engine first, four passenger vehicles equal to five, a waggon in the rear and a passenger guard's van in the rear of the waggon. The train was so marshalled on arriving at Shefford. The engine and tender were fitted with the steam-brake and the four—equal to five carriages,—with the automatic vacuum-brake, the steam brake on the engine and tender, and the automatic vacuum-brake on the four, equal to five, vehicles being applied by one lever from the engine. The waggon, the fifth vehicle from the engine, was not fitted with the automatic vacuum-brake, consequently the brakes of the two vehicles in the rear were not in use from the engine. The train was brought to a stand at Henlow and Shefford by the use of the continuous-brake, and it was in good working order. After the train had been brought to a stand at Shefford and the work at the platform had been completed, the two rear vehicles on the train were placed on the down main line on the Hitchin side of the crossing leading from the down main line into the goods yard. The station-master held the points in the down main line to turn my train from the down main line into the siding, and before setting back I took care to satisfy myself that the signals for the up line were at danger. Just before setting back from the down platform I heard an engine north of the station whistling, but I did not see any train. During the time the train was being backed into the goods yard, I noticed an up train coming towards the station, and I quite thought it was the ballast train. I took no further notice of it until I had brought my engine to a stand, and the waggon of pigs had been coupled on, when I heard the station-master shout, and on looking round I saw the engine of the up train near the Hitchin end of the bridge and not many yards from my engine. My fireman and I left our engine, and directly afterwards the collision took place. My engine was at a stand at the time of the collision, and I estimate that the engine of the goods train struck my engine at a speed of four or five miles an hour. I did not notice whether the brakes on the goods train were on or off. Steam on this engine was shut off when the collision took place. I cannot speak positively on this point.

William Humphries states: I have been in the service nine years, fireman six years, and accustomed to run between Bedford and Hitchin about four years. On the 2nd August I came on duty at 6.25 a.m. My duties are as described by driver Rush, i.e., I work four days each week, the other two week days I am off duty, and I do not work on Sundays. On August 1st I was off duty. I left duty on July 31st about 9.5 p.m. I have heard the statement made by driver Rush, which is correct, and I have nothing to add.

George Drage, passenger guard, states: I have been in the service 21 years, a passenger guard about 19 years, and accustomed to run between Bedford and Hitchin about 17 years. On August 2nd I came on duty at 7.5 a.m. to work the same trains as described by driver Rush. On August 1st I left duty at 8.40 p.m. I worked the 2.58 p.m. passenger train from Hitchin, and the train was marshalled as described by Rush. Nothing of an unusual character took place in connexion with the working of the train until after the waggon of pigs had been attached in the goods yard. When the passenger train was backed from the down platform I rode back in the

rear vehicle on the train, and brought that and the next vehicle to a stand by the application of the guard's brake clear of the crossing leading from the down line into the goods yard, and after having done so I left the brake on and went across to the siding-points and held them in the proper position for the passenger vehicles to run upon the line upon which the waggon of pigs was standing. As the passenger train was crossing into the goods yard I noticed an up train approaching between the home and distant signals, the driver at that time having his whistle open, apparently asking for the home-signal to be lowered. It never occurred to me at this time that the up train was approaching the station at such a speed that the driver would be unable to bring his engine to a stand at the up home signal. Three cattle waggons that were standing in a siding at the north end of the Shefford goods yard obstructed my view of the up line, except for a short distance, and just before the collision took place, when I was still holding the points, I saw the engine of the up train approaching, but too late to take any action with a view to avert a collision. Two passengers complained to me of being slightly injured. There was no steam on upon the goods train engine at the time of the collision. When I first saw the goods train approaching my train was setting back upon the down line to put off the two rear vehicles clear of the crossing.

James Thomas Smith states: I have been in the service three years, and a goods porter at Shefford about two years. On August 2nd I came on duty at 7.0 a.m. to remain until the goods train due at 8.13 p.m. had passed. On August 1st I left duty about 8 p.m. I knew that the 2.58 p.m. passenger train from Hitchin to Bedford had to attach a load of pigs at the station, and I was therefore in attendance when it set back into the goods yard for the purpose of attaching. Shortly before the train commenced to set back, or during the time it was doing so, I heard the engine of an up train whistling. When the rear vehicle of the passenger train reached the waggon of pigs I coupled it on, and having done so I passed from between the vehicles under the buffers in the usual way, and went to the cattle waggon to lift up the brake, but before I could do so the collision took place, and the waggon was forced on to the carriage dock.

William Taylor Willis, driver, states: I entered the service of the Midland Railway Company as cleaner in 1858. In 1859 I left the service, and went to the Danube and Black Sea Railway, and returned to the Midland service as driver in 1866, and have been in the service since that time. I have known the Bedford and Hitchin line as a driver for more than 20 years, but there have been somewhat long intervals when I have not been over the line. I resided at Hitchin for about 12 months and worked goods trains over the line almost daily. On August 1st I left duty at 7.25 p.m. On August 2nd I came on duty at 1.30 p.m. to work a special train from Bedford to Hitchin. I left Bedford about 2.45 p.m. My train consisted of engine 835—six-wheel coupled, and six-wheeled tender—running engine first, and 26 loaded mineral waggons, with a guard's brake in the rear. The wheels of the engine were not provided with any brake; the wheels of the tender were provided with the ordinary hand-brake. Nothing of an unusual character took place between Bedford and Shefford. When I sighted the Shefford station up distant-signal it was at danger, and I opened the engine-whistle. At that time I was running at a speed of about 25 miles an hour. I had previously shut off steam at the overbridge about half a mile before reaching the distant-signal, as I knew that the line from there to Shefford station was on a falling gradient. I instructed the fireman to apply the brake, and I then assisted him to apply it more tightly. When near to the distant-signal I sighted the home-signal at danger.

On passing over the road bridge about 80 yards on the station side of the distant-signal I opened the sand-valves, placed the engine in back gear, and applied steam. At this time the whistle was open. When about half-way between the distant and home signals I noticed the passenger train backing on the down line on the Hitchin side of the station, and when I was very near to the home-signal I noticed the passenger train crossing the up line. At this time the speed of my train was about eight or nine miles an hour, and, although I did my best to stop, I was unable to do so before coming into collision with the passenger train at a speed of about five miles an hour. I did not leave the engine, and was upon it when the collision occurred. My fireman jumped off the engine on the rear side between the passenger platform and the point of collision. The weather was fine, the rails were dry, and the atmosphere was clear. The hand-brake did not appear to act very well, as the trailing-wheels only of the tender were skidding. There was no defect that I could see either in the engine or tender, more particularly as regards the brake. When my engine was attached to the train at Bedford the hand-brake seemed to have the same effect as usual, but at the time the engine was attached at Bedford I had only a few waggons attached to it. I believe the guard's brake was applied. I took the train from Cardington through the Warden tunnel up a gradient of 1 in 120 for a distance of more than 2 miles, and the gradient approaching Shefford is a falling one of 1 in 120, and I can only account for the mishap by commencing the descent of the gradient at too great a speed, but at the time I assumed the speed at which I commenced the descent was such that I had full control of the train. I am quite certain that after reversing inside the distant signal I applied back steam, and steam was full on when I struck the other engine. The regulated load is 25 exclusive of brake-van. My speed when passing the distant-signal was about 25 miles an hour.

Arthur Fowler states: I have been in the service two years as engine cleaner, and occasionally employed as fireman since June 19th last. On August 2nd I came on duty at 6.0 a.m. as an engine cleaner. I left duty the previous night at 6 p.m. About 12.30 p.m. I received instructions to work as fireman with driver Willis with a special train from Bedford to Hitchin. This was the first journey I have made from Bedford towards Hitchin. I have heard the statement made by driver Willis, and as far as I know it is correct. When I left the engine between the passenger platform and the point of collision, I think the speed was not more than about five miles an hour. I simply got on to the step of the tender, and then dropped on to the ballast without difficulty. My driver reversed his engine after passing the distant-signal. He then applied steam and kept it on until he had passed the platform. He then shut off steam just before the collision took place. I think the speed at the distant-signal was about 25 miles an hour. I applied the tender-brake as soon as we came in sight of the distant-signal, and I kept it on. I opened the sand-boxes about half-way between the distant and home signals.

Robert Monday states: I have been in the service 21 years, goods guard about 18 years, and accustomed to run between Bedford and Hitchin, and over other lines from Bedford the whole of that time. On August 2nd I came on duty about 2.30 p.m. to work a special train from Bedford to Hitchin. On August 1st I left duty at 9.40 p.m. We left Bedford at 2.45 p.m. My train consisted of engine 835, tender, and 26 loaded waggons, and an ordinary screw guard's brake in the rear. The waggons were loaded as follows:—18 with broken granite; two with coal; three with salt; two with bricks, and one with sanitary pipes. The load for engines as arranged in the Appendix to the working time-table is 25

minerals from Cardington to Hitchin, and this being so, the engine was loaded with a load of sanitary pipes beyond the recorded loading, but in consequence of several of the waggons being small as compared with the loads of coal, I was satisfied that my train was not overloaded, and the train was taken up the incline for which the reduced loading is arranged from Cardington at the usual speed. When we commenced to descend the incline towards Shefford Station I thought we were going too fast, as it occurred to me that the 1.45 p.m. goods train, Bedford to Hitchin, might be standing at Shefford station doing its work; I therefore applied my brake slightly. This was before the driver shut off steam. Steam was shut off when the engine was near to the three-arched bridge, about half a mile on the Southhill side of Shefford up distant-signal. I still felt that we were going too fast, and I applied my brake more forcibly, and before I could see the distant-signal, my driver whistled, and I at once concluded that the distant-signal was at danger. A pair of wheels of my brake were then skidding, and the blocks were binding on the other tyres. I was paying very great attention to the train going down the incline and looking ahead, and when my brake was near to the under-bridge, about 80 yards on the station side of the up distant-signal, I noticed the down passenger train in motion, and I thought it was leaving the station, but some little time after, I noticed it going across the road, and I was then very much afraid that we should not come to a stand, and that a collision would be the result. When the engine of my train was about midway between the distant and home signals, I believe the driver reversed the engine and applied steam with the engine in back gear, and from this time the speed appeared to be considerably reduced. I remained in my van until it arrived alongside the platform, when I stepped from it on to the platform just as the collision took place. I had just previously noticed the fireman drop off on the near side. I estimate the speed of my train, when my driver shut off steam in the first instance, at from 25 to 30 miles an hour. The speed of the train did not appear to be reduced to any extent to speak of between the three-arched bridge, half a mile on the

Southill side of the distant-signal and a point some distance on the station side of that signal. I think the speed at which my train passed the home-signal would be about eight or nine miles an hour, and the speed at the time of the collision about five miles an hour. I have often worked with driver Willis. He has never overrun signals with me before.

Henry Odell, ganger, states: I have been in the service about 30 years, and ganger on the Shefford length about 13 years. On August 2nd I came on duty at 6.0 a.m. to remain until 5.30 p.m. I left duty on August 1st at 5.30 p.m. In the afternoon of August 2nd I was working near the Shefford station up distant signal, when I heard the engine of an up train give a long whistle before it came in sight. At this time the Shefford station distant and home signals were at danger, and just about the time the up train was passing me I noticed that the down passenger train was in motion, going across the up main line into the goods yard. The up train passed me at what I consider a fast speed, perhaps 30 miles an hour. After the engine had passed the distant-signal or was somewhere near the underbridge on the station side of it, I heard the driver open the engine whistle, and he continued to use the whistle for some time. When the train passed me the engine had the steam shut off. I cannot say whether the tender-brake was or was not applied. I did not notice a brake being applied to any wheels of the waggons on the train. The guard's brake was fully applied, and two of the wheels were skidding when it passed me. As I knew that the passenger train was being shunted across the up line at Shefford station, I continued to look at the mineral train as it was proceeding towards Shefford, as I knew if it was not brought to a stand a collision must be the result. Shortly afterwards I saw dust rising at the station, and I then concluded that something had taken place, and proceeded with my men towards the station. On the journey I met the station-master who was coming to request us to give assistance. The train when it passed me was running faster than trains usually do when they have to stop at the station.

Conclusion.

This collision, which would certainly have had very serious consequences if the passenger train had not been reduced in length by two vehicles being detached and left upon the down line, occurred under the following circumstances.

The train, consisting of engine, tender, four passenger carriages, one goods waggon, and brake-van, arrived at Shefford station at 3.12 p.m., and, having to attach a waggon laden with pigs, which was standing on a siding on the up side of the line, it was pushed back clear of the points of the through road leading to the siding, the two rear vehicles were detached and left upon the down line, the train was drawn forward over the points, and then pushed back across the up line on to the siding, the engine not being clear of the up line when the waggon of pigs was attached.

The special up mineral train, which had left Bedford at 2.45 p.m., was approaching Shefford, and was actually in sight before the passenger train was backed across the up line, the guard of the passenger train having seen it when near the distant-signal, as his train was being backed from the station to put off the two rear vehicles.

The station-master did not see it until after the passenger train had been backed into the goods siding, when the goods train engine was only about 100 yards away, but he had heard this engine whistling when he was holding the main line points for the passenger train to cross. The driver of the passenger train heard the whistling when his train was standing at the platform and saw it approaching when he was backing his train across the up line.

The driver of the goods train, upon seeing the up distant-signal at danger, opened his whistle, and he seems to have continued to whistle at intervals until the collision occurred.

He had shut off steam at the top of the incline, and the tender-brake was applied when the distant-signal was found at danger, but nevertheless this signal was passed at a speed of about 25 miles an hour. The home-signal was seen to be at danger

from a point near to the distant-signal, and about 80 yards inside the distant the engine was reversed, and back steam applied, and the sand-boxes were opened.

In spite, however, of these steps being taken and the guard's brake having been tightly applied before the distant-signal was reached, the goods train could not be pulled up, and it was running at a speed of some five miles an hour when it struck the side of the passenger train engine, 180 yards beyond the home-signal, where it ought to have stopped. It was not possible for the station-master or the driver of the passenger train to take any steps to avert the collision, for the siding was not of sufficient length for the engine to be pushed back clear of the up line, and it was too late when they saw the goods train to pull the passenger train out on to the down line.

The immediate cause of the collision was the omission of the driver of the goods train to get his train at once under proper control when running down the incline of 1 in 120 when he saw the distant-signal at danger, and this man, who had at the time been on duty for about an hour, frankly admits that this is the case. I consider however that it was very rash to allow the passenger train to be backed across the up line when a train was approaching upon this line, with the engine whistling for the signals, and I think that the station-master, and the driver and guard of the passenger train, are all more or less responsible for this having been done. It is quite clear that they all took it for granted that the goods train would be stopped at the up home-signal, and, judging from their conduct, I fear that the practice of thus fouling a line before an approaching train has been stopped is not uncommon.

At the time of the collision the station-master had been on duty for about $7\frac{3}{4}$ hours, the driver for about $8\frac{3}{4}$ hours, and the guard for about $8\frac{1}{4}$ hours.

The collision is one which would not have occurred under a proper system of block-working, and the want of this upon a line of this importance is not creditable to the Company.

If the engine of the goods train had been fitted with a steam-brake the train might probably have been stopped in time, and it is to be hoped that before long the necessity of so fitting all goods engines will have been recognised.

The Assistant Secretary,
Railway Department, Board of Trade.

I have, &c.,
F. A. MARINDIN,
Major, R.E.

APPENDIX.

DAMAGES TO ROLLING STOCK.

Engine No. 194.—Buffer-plank broken, drawbar-hook strained, spindle ends bent and glands damaged, sand-pipe broken.

Engine No. 835.—Buffer-plank broken and angle-iron bent, crank-axle strained, both spindles bent and glands damaged.

No. 13 third-class brake carriage.—One quarter light and one sill plate broken, and buffer castings loosened.

No. 1,456 bogie first-class carriage.—Four centre casting bolts broken.

No. 228 first-class carriage.—Two doors strained, one sole plate bent, buffer-casting blocks and bolts loosened.

No. 243 bogie third-class brake carriage.—Two end step irons, two step boards, two brake pull rods, and three friction-plates broken.

No. 28,052 cattle waggon.—Completely wrecked.

Printed copies of the above report were sent to the Company on the 24th September.

MIDLAND RAILWAY.

Board of Trade, (Railway Department),
1, Whitehall, London, S.W.,

25th September 1889.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 4th instant, the result of my inquiry into the causes of a collision, which occurred on the 3rd instant, at Morecambe station on the Midland Railway.

In this case, as the eight carriages forming the 10.25 a.m. train from Morecambe to Leeds and Bradford was standing at the up platform line at about 10.20 a.m., the engine, No. 811, which was coming from the turntable, and making a shunt in order to get to the front of the train, ran at too high a speed through a cross-over road,

and came sharply into collision with the rear vehicle of the train, a bogie third-class carriage. No vehicles left the rails or were badly damaged, but the train was driven slightly forward, and the two rear carriages were detached before the train started on its journey.

Ten passengers were injured, and a servant of the Company, who was standing on the platform, was knocked down by an open van door.

The following were the damages to the rolling stock—

No. 399. Third-class bogie carriage.—One headstock, 2 buffer-castings, 1 bottom bolster, 1 top bolster-casting, 1 end panel, 6 quarter lights, and 2 door lights broken, and 2 buffer-rods, and 2 brake-rods bent.

No. 565. Composite carriage.—Drawbar hook broken.

Description.

Morecambe is the terminus of a double line branch, with a double-aided station under a roof, the buildings being upon the up platform.

It is signalled for running in upon both sides, but for starting from the proper up side only, and, as a rule, down passenger trains cross on to the up line at the east end of the station and run to the up platform.

West of the station is a long excursion platform and sidings, and a turntable road on the down side of the line.

There is no direct access to the turntable road from the down line, so that engines coming out from the turntable have to run out on a road leading to the up line, back through slip points on to the down line, and then, if they have to get to the front of a train standing at the up platform, run forward on the down line to the east end of the station to cross on to the up line and back to the train.

The signal-box is at the east end of the station on the down side of the line, 100 yards east of the point of collision.

The point of collision was on the up line, about two-thirds of the way along the station buildings, close to the trailing points of the cross-over road.

The following distances westwards from the point of collision should be noted:—

	Yards.
To trailing points of cross-over road - - - - -	2
To slip points - - - - -	36
To signal for coming out from turntable - - - - -	123
To point from which the engine started to come out - - - - -	200

The line is practically level.

No. 811 engine was fitted with a steam-brake, working blocks on the four coupled wheels and on the six tender wheels.

Evidence.

William Henry Stead, driver; in the service 23 years, engine-driver about 16 years, said: I was stationed at Carlisle from 1875 to 1887. Prior to 1875 I frequently ran to Morecambe, and was a fireman between Leeds and Morecambe for some time. Since 1887 I have been stationed at Leeds, and have occasionally worked to Morecambe, and I made two trips between Leeds and Morecambe in Whitweek. I did not work to Morecambe between Whitweek and September 3rd. On September 3rd I came on duty at 5.0 a.m. and worked the 6.0 a.m. passenger train from Leeds to Morecambe, the 9.20 a.m. passenger train, Morecambe to Lancaster, the 9.50 a.m. passenger train, Lancaster to Morecambe, the 10.25 a.m. passenger train, Morecambe to Bradford, light engine Bradford to Saltaire, and the 2.20 p.m. Saltaire to Leeds, due to arrive at Leeds at 2.55 p.m. I left duty on September 2nd at 1.45 p.m. We left Lancaster with the 9.50 a.m. passenger train at 9.50 a.m. and arrived at Morecambe at 9.56 a.m., right time. We arrived at the station side platform in the usual way, and after the passengers had alighted, the empty carriages were backed towards Lancaster clear of the points of the road leading to the engine turntable. After the points had been opened for my engine to go on to the table road to turn, the empty carriages were drawn forward to the points, and my engine was then uncoupled, the carriages being left on the platform line just clear of

the points. I then took the engine on to the table and turned it; the fireman cleaned the fire and I oiled the engine. I then left the turntable and came towards the signal applicable to the line my engine was upon. It was at that time at danger. I proceeded with the oiling and did other necessary work to the engine, and after the signal was lowered for me to leave the turntable siding, I did so, intending to bring my engine to a stand at the Lancaster end of the slip points on the second line from the platform for the purpose of taking it to the Lancaster end of the train. When I considered I had sufficient speed to take me over the points, and when at such a distance from the points that I thought I should be able to bring my engine to a stand at the proper place, I shut off steam, and afterwards applied the steam brake with which the driving and trailing wheels of the engine, and all six wheels of the tender, are fitted. After applying the brake I found, in consequence of a drizzling rain making the rails slippery, that the engine was not stopping as I expected it would. I therefore reversed the engine and applied steam, but the catch of the screw reversing gear did not go into the slot, and at once flew into fire soon. The consequence was the steam that I applied caused the engine to go forward instead of, as I expected, enabling me to stop sooner, and my engine came into collision with the passenger train at a speed of about

six or seven miles an hour. No damage was done to the engine or tender. Two buffer-castings of the rear vehicle of the passenger train and the drawbar hook of the vehicle next to it were broken. No vehicles left the rails. The two vehicles in the rear of the train were detached and the remainder of the vehicles were despatched in the usual way. The 6.0 a.m. train from Leeds to Morecambe, 9.20 a.m. Morecambe to Lancaster, and 9.50 a.m. Lancaster to Morecambe, were all fitted with the automatic vacuum brake, and every stop was made by the application of this brake, which was in good working order. I had used the steam brake on the engine and tender when not attached to the train at least five or six times the same morning, and the brake was in good working order. I had 120 lbs. of steam at the time the mishap took place. My reversing gear was in perfect working order, and I account for it flying into fore gear by opening the regulator too hurriedly.

William Hopkins, fireman; in the service 10 or 11 years, fireman two years, and accustomed to run to Morecambe about two months, said: The journey made to Morecambe on September 3rd would be about my sixth journey. On September 3rd I came on duty at 5.0 a.m. to work the set of trains named by driver Stead. I left duty on September 2nd at 1.45 p.m. I have heard the statement made by driver Stead, which is correct. I, however, do not remember the screw reversing gear flying into the forward position as stated by my driver. It is, however, quite possible that this took place as I was engaged applying the hand-brake at the time. When I found that the engine was going further ahead than I expected it would do, when the steam-brake was applied, I opened the sand valves and applied the hand-brake.

William Levy, passenger guard; in the service 13 years, passenger guard 11 years, and accustomed to run to Morecambe during the whole of that time, said: On September 3rd I came on duty at 5.30 a.m. to work the 6.0 a.m. passenger train, Leeds to Morecambe; the 9.20 a.m. passenger train, Morecambe to Lancaster; the 9.50 a.m. passenger train, Lancaster to Morecambe; the 10.25 a.m. passenger train, Morecambe to Wennington; the 11.33 a.m. passenger train, Wennington to Carnforth; and the 1.20 p.m. passenger train, Carnforth to Leeds, due to arrive at Leeds at 3.5 p.m. On September 2nd I left duty at 3.30 p.m. The 6.0 a.m. train from Leeds to Morecambe consisted of four-wheel coupled engine 811, six-wheeled tender, and 13, equal to 14, vehicles fitted with the continuous brake, the engine and tender being fitted with the steam brake, the steam and automatic vacuum brake being applied by one lever from the foot-plate of the engine. The continuous brake was used at each stop between Leeds and Morecambe, and efficient stops were made with it. The 9.50 a.m. train from Lancaster to Morecambe consisted of seven ordinary vehicles fitted with the automatic vacuum brake, and the stop at Morecambe was made by the application of the brake in the usual way. The 10.25 a.m. train, Morecambe to Leeds, consisted of eight, equal to nine, vehicles in, I believe, the following order from the Lancaster end:—Third-class bogie brake, ordinary third-class, two ordinary composites, two vans, ordinary composite, and bogie third-class carriage. The rear vehicle stood alongside the station side platform, near to the points leading to the engine turntable. I was not aware that anything of an unusual character was about to take place until, when I was in the van, the fourth vehicle from the rear of the train, placing some luggage in position, I was knocked down by the force of the

collision, and at the time I had no idea as to the cause. I afterwards found that the engine, after leaving the turntable, had come into collision with the rear of my train. No passengers complained to me of injury, but I noticed one lady on a seat who appeared to have received a shaking. The two vehicles in the rear of my train were detached, and two others attached in their places, and my train left Morecambe at 10.42 a.m., 17 minutes late. There was a drizzling rain at the time.

Alfred Briggs, in the service seven years; the greater part of the time at Keighley as shunter, said: I have been at Morecambe since June last as foreman for the summer season. On September 3rd I came on duty at 6.50 a.m. I left duty at 8.0 p.m. on September 2nd. The 9.50 a.m. passenger train from Lancaster arrived at Morecambe at 9.56 a.m. After the passengers had alighted the carriages were removed to the Lancaster side of the points to enable the engine to go to the table to turn. During the time the engine was on the table road I obtained another engine that was standing at the station to remove the carriages that had arrived from Lancaster at 9.56, and placed another set of carriages in exactly the same position to form the 10.25 a.m. train Morecambe to Leeds and Bradford. Nothing of an exceptional character took place in connexion with any operation. When the signal was lowered for the engine to leave the table road I was standing near the rear end of the train for the purpose of giving the signalman a hand signal to move the points when necessary to enable the engine to pass from the platform line on to the second line, and to arrange for the engine to go to the Lancaster end of the train in the usual way. The signal was lowered for the engine to leave the table road, and when the engine was near to the signal I thought it was approaching the station too fast. I therefore shouted and held up my hands and ran on the ballast towards the engine. I, however, do not think the driver saw me, as he appeared to be engaged in reversing his engine. I think the speed at which the engine struck the carriages would be about six or seven miles an hour.

George Bond, signalman; in the service five years, signalman 1½ years, and at Morecambe since July 1st, 1889, said: Since July 1st I have performed signalman's duties at the station and West Bank junction signal-boxes. On September 2nd I left duty at 10.45 p.m. On September 3rd I came on duty about 6.45 a.m., to remain at the station box until 12.30 p.m., and then to go to the West Bank junction signal-box until 6.30 p.m. The two boxes at Morecambe are open during the time trains are running, and three signalmen work the two boxes. On September 3rd the 9.50 a.m. train from Lancaster arrived at the station platform in the usual way, and the carriages of the train were dealt with also in the usual way. After the carriages for the 10.25 a.m. train were placed to the platform, the foreman advised me that he was ready for the engine to leave the turntable and come to its train. Some shunting operations had been performed between my signal-box and West Bank junction, and when I was ready for the engine to leave the table, I lowered the signal for it to do so. I noticed the engine leaving the turntable, and the first thing of an unusual character that attracted my attention was the foreman, who was between my signal-box and the turntable end of the train that was alongside the up platform, shouting. I noticed the engine passing across the second line from the platform at apparently too great a speed to stop before reaching the carriages, and shortly afterwards the collision took place.

Conclusion.

This collision was due entirely to an error of the driver of No. 811 engine, who, on coming out from the turntable road to get to the front of the 10.25 a.m. train, ought to have stopped upon the cross-over road as soon as he was over the slip points, through

which he had to set back on to the down line, instead of which he had not got his engine under proper control, and ran about 20 yards further than he should have done, striking the tail of the train when still running at a speed of six or seven miles an hour.

He states that he shut off steam when about 75 yards from the slip points, and applied his steam brake; that finding that he was going too fast he reversed his engine when on the cross-over road; and that because the catch of the screw reversing gear had not gone into the slot, it flew into forward gear the moment he applied steam by opening the regulator hurriedly, so that the speed was increased instead of being diminished.

It was drizzling at the time and no doubt the rails were greasy, but he knew how small a margin he had to stop in, and he should have been more careful.

He had arrived at the down platform with the 9.50 a.m. train from Lancaster at 9.56 a.m., and had left the carriages standing close to the cross-over road points. When he went away to the turntable to turn his engine, these carriages were removed, and the carriages composing the 10.25 a.m. train brought to the platform by a shunting engine, being placed in exactly the same position as that occupied by the 9.50 train.

The driver had been on duty at the time for about $5\frac{1}{2}$ hours.

I would recommend the Company to put in facing slips, so that engines coming from the turntable may run straight out on to the down line, and all shunting of engines going round their trains at the west end of the station will be unnecessary.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

F. A. MARINDIN,
Major, R.E.

Printed copies of the above report were sent to the Company on the 10th October.

MIDLAND RAILWAY.

Board of Trade, (Railway Department),
1, Whitehall, London, S.W.,
27th September 1889.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 19th instant, the result of my inquiry into the causes of a collision which took place on the 14th inst., at Burton-upon-Trent station, on the Midland Railway.

In this case the 1.12 p.m. London and North-Western train from Derby to Birmingham (consisting of engine and tender, one third-class brake, one third-class, two composite, one second-class brake, and one third-class carriages) being suddenly stopped to allow two passengers to alight immediately after it had started from Burton at about 1.30 p.m., was run into by a Midland empty train, which was drawing up behind it.

The only damage to either train was the breaking of a buffer casting in the London and North-Western train.

Three passengers are returned as having been slightly injured.

Description.

At Burton there is one island platform of sufficient length to hold two trains. The point of collision was upon the down line, 218 yards from the north end of the platform. The siding, from which the Midland train was brought out behind the London and North-Western train, has trailing points on the down line 172 yards north of the point of collision. The signal for coming out of this siding is 270 yards, and the signal-cabin is 310 yards north of the point of collision.

The line is practically level.

Evidence.

Thomas Smith states: I have been in the service 23 years, driver about 17 years, and at Burton all the time. On September 14th I came on duty at 12.30 p.m. to work a special passenger train from Burton to Barton and Walton, due to leave Burton at 1.35 p.m., empty carriage train Barton and Walton

to Burton, 2.25 p.m. passenger train from Burton to Ashby via Swadlincote, 3.35 p.m. Ashby to Burton via Swadlincote, 6.35 p.m. passenger train Burton to Ashby via Swadlincote, and the 8.15 p.m. Ashby to Burton via Swadlincote, due to arrive at Burton at 8.52 p.m. I left duty the previous day about 9 p.m.

My engine was attached to the empty carriages to work the 1.35 p.m. passenger train from Burton to Barton and Walton in a siding on the down side of the line north of the Burton passenger station at about 1.10, and I remained in the siding until the 1.12 p.m. London and North-Western passenger train from Derby entered the station. As soon as this train had passed the signalman at the station north signal-box opened the points leading from the siding to the down passenger line, and turned off the ground disc-signal for me to enter the station, and I did so. At this time the London and North-Western train was standing alongside the down platform, with the rear vehicle between the platform buildings and the steps leading to the booking office. I brought my engine to a stand possibly about six yards from the London and North-Western train, and after standing in that position for a minute or a minute and a half the London and North-Western train started, and one of the railway servants on the platform, whom I cannot name, called me forward by hand to follow the train. I gave my engine steam to do so, and after going a short distance I shut off the steam to let the carriages run forward, with the intention of bringing the train to a stand in about the same position in which the London and North-Western train formerly stood. When the London and North-Western train had moved ahead about a carriage length it was brought to a stand very suddenly. On seeing it was being brought to a stand I at once applied the continuous brake, which acted properly, but being so near to the London and North-Western train I was unable to bring my engine to a stand before touching the buffers of the rear vehicle, the speed at the time would possibly be half a mile an hour. No vehicle in either train left the rails, and, so far as I know, no damage was done. I am not aware that any passenger complained of being shaken. My train consisted of engine No. 86 (driving and trailing wheels coupled), six-wheeled tender, and four—equal to five—passenger vehicles. The engine and tender were fitted with the steam brake, and the carriages with the automatic vacuum brakes, the steam brake on the engine and tender and the vacuum brake on the carriages being applied by one lever on the engine. The brake was in good working order, and I brought the train to a stand by its use when following the London and North-Western train into the station.

William Hunt states: I have been in the service about 11 years, fireman eight years, at Burton all the time. On September 14th I came on duty at the same time as driver Smith, to work with him the whole of the day. I left duty the previous night the same time as Smith. I have heard the statement made by driver Smith, which is, so far as I know, correct. I do not remember that the shunter told us to follow the London and North-Western train into the station, but it is usual for the shunter to tell us what we have to do when leaving the sidings. I did not see any person give the driver a hand-signal to follow the London and North-Western train after that train had been started, but I heard someone shout "Come on," and shortly afterwards I saw inspector Jarvis hold up his arms and shout for us to stop, but at this time the brake was applied.

Joseph Jarvis states: I have been in the service 25 years, and station inspector at Burton about seven years. On September 14th I came on duty at 8.15 a.m., to remain until about 8.15 p.m. I left duty the previous day at about 8.15 p.m. The London and North-Western passenger train, due to leave Derby at 1.12 p.m., arrived at the down platform at 1.38, and was brought to a stand with the rear vehicle between the steps leading to the booking office and the station buildings. After the business of the station had been completed I was near the front of the London and North-Western train, which train consisted of about six vehicles. I was near the second carriage from the engine when I gave the London and North-Western guard the signal to start

the train, at about 1.40, or about two minutes after the train had been brought to a stand. I knew that I had arranged for the empty carriages forming the 1.35 p.m. passenger train Burton to Barton and Walton to follow the London and North-Western train into the station; but I cannot say whether I saw the empty carriage train standing near the rear of the London and North-Western train or not. I was walking towards the rear of the London and North-Western train when it started, and very shortly after it was in motion I saw a lady open a carriage door. I heard her say she was in the wrong train, and required to go to Birmingham by a Midland train. I therefore gave the driver of the London and North-Western train a hand-signal to stop, and he very promptly obeyed the signal. The lady who had first spoken left the train, and another lady followed her out of the same compartment. I gave the London and North-Western guard a signal to start the train a second time, and as it was about moving, and as I was closing the carriage door, the Midland engine touched the London and North-Western train. I heard some football players in the last carriage say, "What are you doing?" and the London and North-Western train proceeded on its journey. I did not call the Midland driver on, and did not know who did. The bringing of one train out behind another at the platform is a daily occurrence. Sometimes the drivers wait till they are called on, and sometimes they come on without a signal.

William Sutton states: I have been in the service between 11 and 12 years, and shunter at Burton about seven years. On September 14th I came on duty at 7.0 a.m. to remain until 6.0 p.m. I left duty the previous night at 6.0 p.m. Shortly after 1.0 p.m. I coupled engine No. 86 on to the train of four carriages that were to form the 1.35 p.m. special passenger train Burton to Barton and Walton, and I afterwards returned to the passenger station. The London and North-Western passenger train, due to leave Derby at 1.12 p.m., was reported as leaving Derby several minutes late, and inspector Jarvis, after the London and North-Western train had been signalled to enter the station, instructed me to tell the signalman at the station north box and the driver of the special train to Barton and Walton that the latter train would be required to follow the London and North-Western train into the station. I instructed the signalman at the station north signal-box and the driver accordingly, and the train entered the station as arranged. I remained at the signal-box to perform other duties.

Robert Firth states: I have been in the service 25 years, a signalman all the time, and at Burton station north box about six years. On September 14th I came on duty at 6.0 a.m. to remain until 2.0 p.m. I left duty the previous day at 2.0 p.m. When I had lowered my signals for the London and North-Western train to enter the station shunter Sutton came to me and said that the empty carriages for the Barton and Walton train were required to follow the London and North-Western train into the station. I saw the shunter go to the driver, and after the London and North-Western train had entered the station I went to the window of my box and called to the driver for him to follow the train into the station, and I was not aware until the 23rd September, when I was instructed to attend an inquiry, that anything unusual had taken place in connexion with the trains in question.

George Lipscombe states: I have been in the service of the London and North-Western Railway Company for over 30 years, and over 20 years a guard. On the 14th September I came on duty at 6.55 a.m. to work between Derby and Birmingham. On my second trip I was guard of the 1.12 p.m. train from Derby to Birmingham. It was made up as follows:—Engine and tender, one third-class brake,

one third class, two composite, one second-class brake, and one third class. I was riding in the last vehicle but one. We started at 1.20, arrived at Barton at 1.37, and started at 1.40. The account given of the collision by inspector Jarvis is correct. I got out when the train stopped, and was on the platform when the collision occurred. The vacuum brake in my train was on. I think one buffer casting was split. It was a slight affair, but several people complained of the shake.

William Thompson states: I have been in the service 37 years, and over 29½ years a driver. On the 14th September I was driver of the London and North-Western 1.10 train from Derby. Immediately after I had started from Barton I was stopped by signal from the inspector. I used my vacuum brake and stopped quickly, not having run above one carriage length, or one and a half at the outside. I was starting again when the tail of my train was struck, and I just felt the collision.

Conclusion.

This collision was brought about in the following manner:—At 1.37 p.m. the London and North-Western 1.10 p.m. train from Derby arrived at Barton and stopped in the usual place, with the tail of the train about a third of the way along the platform. As soon as it had passed the trailing points of a siding on which an empty Midland train had been waiting since 1.10 the signalman called out this train, which was to have left Barton at 1.35 p.m., and told the driver to follow the London and North-Western train to the platform. The driver came out in accordance with the instructions received from the signalman, and also from a runner, and brought his train to a stand with the engine about six yards behind the tail of the London and North-Western train.

At 1.40 p.m. the latter train started upon its journey, but was at once stopped by a signal from the inspector in charge of the platform, in order to allow two passengers, who had got into it by mistake, to alight.

As the London and North-Western driver used his continuous brake to stop, with he came to a stand very suddenly, after having run for not more than 15 or 20 yards, and the Midland driver, who had started to bring his train forward to the part of the platform where the London and North-Western train had been standing, having no warning beyond seeing the train in front come suddenly to a stand, was unable quite to stop his train, even by the use of the continuous brake, and came slightly into collision with the rear vehicle of the London and North-Western train.

I do not think that he can be blamed for the accident, which took place during the performance of an operation which is of daily occurrence at most large stations, especially at terminal stations, but I would advise the Company to caution their station staff at such stations not to stop an outgoing train too suddenly, or without making sure that the driver of an engine or train drawing up behind it is made aware of what is being done.

The Assistant Secretary,
Railway Department, Board of Trade.

I have, &c.,
F. A. MARINDIN,
Major, R.E.

Printed copies of the above report were sent to the London and North-Western and Midland Railway Companies on the 10th October.

MIDLAND RAILWAY.

Board of Trade, (Railway Department,
1, Whitehall, London, S.W.,
20th December 1889.

SIR,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 9th instant, the result of my enquiry into the causes of a collision which occurred on the 25th ultimo at Normanton joint station.

In this case the 3 p.m. Midland express from London to Bradford (consisting of engine and tender, bogie third-class brake-carriage, three bogie composite carriages, and brake-van), when running through Normanton station at about 7.10 p.m., came into collision with two empty Lancashire and Yorkshire carriages which were standing upon the down main line 57 yards north of Normanton station north signal-cabin, waiting to be crossed on to the down line.

The empty carriages were driven forward on the down line for about 350 yards, when one of them left the rails, and the express came to a stand in about its own length from the point of collision.

Two passengers are returned as having been slightly injured.

In the Midland train only the front of the engine was damaged, but one of the Lancashire and Yorkshire carriages was considerably damaged. A return of damages to the rolling-stock and permanent-way is given in the Appendix.

Description.

Normanton station has an island platform with up and down platform lines, and up and down through lines outside the platform lines.

There is a signal-box at each end of the station, and two boxes at the centre of the station, one for the up side and one for the down side.

The signalmen in the central boxes control the entrance of trains into the station by mean of a code of bell signals to the north and south cabins, in which also they work indicating discs, and they work the points of cross-over roads leading from the platform lines to the through lines, but they do not have control over any outside signals.

The station is one of those upon the line considered as a terminal station, and is not worked upon the absolute block system. Drivers are warned to be prepared to stop at any point unless the signals are off for running through the station, and the speed is limited to 20 miles an hour in all cases.

The north signal-box contains 21 levers, working, among other signals, down home-signals for the down platform and down through lines, and also down distant-signals for these lines. The former are upon a double-armed post situated about 37 yards south of the signal-box, the top arm applying to the through line and the bottom arm to the platform line, and are visible from the south signal-box. The latter are upon a bracket post near the south signal-box.

The north signal-box is 225 yards north of the west (central) box, and 528 yards north of the south signal-box.

The point of collision was about 57 yards north of the north box, and about 94 yards north of the down home-signals.

If the line were clear of smoke and steam a red light at this point should be seen from an approaching engine on the down platform line for at least 300 yards.

There is no telegraph communication between the north and south boxes.

The line falls slightly towards the north.

Evidence.

William Manning, foreman; in the service of the Normanton station joint committee about six years, and foreman about 15 months, states: On November 29th I came on duty at 10.30 a.m. to remain until 10.50 p.m. I left duty the previous day at 10.50 p.m. The 5.15 p.m. Lancashire and Yorkshire passenger train from Manchester to York, due to arrive at Normanton at 8.52, arrived at 7.6 p.m., and had two carriages in the rear which had to be detached at Normanton. The carriages were detached during the time the train stood on the down platform line, and the train left for York at 7.9 p.m. At this time a down goods train was standing on the down through line, and I asked one of the men on the platform, I cannot now say who, if arrangements had been made for the carriages to be disposed of at the south end of the station. He replied that the signalman at the south end had given permission for a down train to approach, and consequently I had to arrange for the carriages to be disposed of at the north end of the station. I arranged for a horse in charge of driver George Morgan to take the carriages, and for porters John Swingle and Albert Rice to accompany Morgan and dispose of them. The carriages left the station perhaps two minutes after the Lancashire and Yorkshire train had left. I saw the carriages being taken towards the north end of the station, and I then left the downside to attend to the 6.35 p.m. Lancashire and Yorkshire train from York to Manchester, due to arrive at Normanton at 7.15 p.m. This train arrived at 7.18 p.m. and left at 7.20 p.m., and it was not until after this train had left the station that I heard that the down express had come into collision with the empty carriages near the north signal-box. I was in charge of the station at the time. Through trains sometimes run through on the through line and sometimes on the platform line.

Occasionally they are put through from the platform to through line after being brought nearly to a stand.

Albert Rice, porter, states: I entered the service of the Normanton station joint committee seven years ago as lampman. I remained at Normanton, about one year and nine months, and was then removed to the Midland service at Eckington North as porter. I remained there until about three months since, when I was removed back to Normanton as porter. On November 29th I came on duty at 10.30 a.m. to remain until 10.50 p.m. I left duty the previous day about 10.50 p.m. After the 5.15 p.m. Lancashire and Yorkshire train from Manchester to York had left the station, I, together with porter Swingle, received instructions to accompany the two empty carriages that had been detached from that train, and take them from the down to the up side of the station at the north signal box. Horse-driver George Morgan coupled his horse to the carriages, and Swingle and I with our brake-sticks kept the vehicles well under control until the signalman at the north signal box lowered the signal to intimate that the carriages might run beyond the cross-over road. The carriages were then taken beyond the bridge and brought to a stand with the rear vehicle about 15 yards north of the bridge. The horse was unhooked from the carriages, and just at this time I saw the down express approaching very near to, the north end of the platform, and the speed appeared to me to be such that it would not be brought to a stand before coming into collision with the carriages. I waved a red light, and shouted, and very shortly afterwards the express came into collision with the carriages. The carriages were forced ahead to the north junction signal-box, where the rear one

came off the rails with one pair of wheels. The rear carriage was very much damaged, but I did not notice that anything was amiss with the front carriage. The carriages remained coupled together. The engine of the express was I think about 10 yards south of the home-signal when I got sight of it. The home-signal was off. I did not hear any engine whistle. The brakes were applied before the train reached the bridge. I cannot estimate the speed at the time of the collision. As a rule carriages having to go to the up side, as in this case, are taken through a cross-over road on to the through line, but the through line was blocked by goods trains.

John Swingler, porter, states: I have been in the service of the Normanton station joint committee about 15 months. On November 29th I came on duty at 2.0 p.m. to remain until 11 p.m. I signed off duty that morning at 5 o'clock, having been called upon to work as extra guard with a fish train from Normanton to Nottingham the previous night. I have heard the statement made by porter Rice. It is correct, and I have nothing to add.

George Morgan, horse-driver, states: I have been in the service of the Normanton station joint committee about 8½ years. On November 29th I came on duty at 7 p.m. to remain until 7 a.m. on the 30th. On November 29th I went off duty at 7 a.m. I have heard the statement made by porter Rice, which is correct, and I have nothing to add.

John Wormald, engine-driver, states: I have been in the service of the Midland Railway Company 32 years, an engine-driver 24 years, and accustomed to run through Normanton all the time. On November 29th I came on duty at 12.25 p.m. to work the 1.25 p.m. express passenger train from Leeds to Nottingham, and the 5.37 p.m. express passenger train, Nottingham to Leeds. I left duty on November 28th at 11.15 p.m. On leaving Nottingham my train consisted of four-wheel coupled engine, 1,506, six-wheeled tender, and five vehicles, equal to seven. The driving and trailing wheels of the engine and all six wheels of the tender were fitted with the steam-brake, and the carriages with the automatic vacuum-brake, both brakes being applied by one lever from the foot-plate of the engine. I left Nottingham three minutes late, and was delayed three minutes at Chesterfield by extra stop. At Sheffield two carriages were attached on the rear of the train, one of which was slipped at Masboro' and the other at Cudworth. I was also delayed two minutes by signals approaching Swinton. The Goose Hill junction (Normanton) down distant-signal was at danger when I approached and passed it. On sighting the Goose Hill junction down home-signal it was lowered for me to proceed. The distant and home signals, worked from the station south box, were off when I sighted them, but the distant-signal, near the station south box, and worked from the station north box, was at danger. I proceeded by the side of the platform at a slow speed, possibly 10 or 12 miles an hour, until I sighted the home-signal at the north end of the station, worked from the north box, which was off, and at the same time I noticed that the distant-signal near the station north box, and worked from Normanton north junction, was also off for me to proceed. I then applied steam, and I estimate that I had attained a speed of from 15 to 18 miles an hour when I was passing the north end of the platform. At this time I noticed a red light ahead, and I at once shut off steam and applied the continuous-brake. It acted promptly and efficiently. The train appeared to be as if held in a vice, but I could not succeed in bringing the train to a stand before coming into collision with the carriages at a speed of possibly 10 miles an hour, causing considerable damage to the vehicle that was struck, knocking off the chimney of my engine, damaging the buffer-plank, slightly damaging the smoke-box door, and also damaging the steam-brake pipe. My train came to a stand in

about its own length after the collision. As regards the speeds which I have given, they are only estimated, and I cannot say that they are strictly correct. I did not sound my whistle, and there was no time to sand the rails. There is a regulation that no train is to pass through Normanton at a speed of more than 20 miles an hour, that is if all signals are off. The home-signal was rather obscured by steam from engines on the through line and other lines, and I expect that this was the cause also of my not seeing the red tail-lamp sooner. With this train I generally run through on the platform line. I think I was about 40 yards from the obstruction when I put my brake on. I cannot be sure whether I was past the home-signal or not. I was not hurt at all.

Eli Guy, fireman, states: I have been in the service of the Midland Railway Company about nine years, and fireman about six years. On November 29th I came on duty at 12.25 p.m., having left duty the previous day at 11.15 p.m., to work as fireman with driver Wormald. I have heard the statement made by driver Wormald, which is correct, and I have nothing to add. When we saw the red light I took hold of the rod working the sand-boxes, and this applied sand to the rails. I was holding on to it when the collision occurred. I was not hurt.

George Heighway, passenger guard, states: I have been in the service of the Midland Railway Company 21 years, a passenger guard about 19 years, and accustomed to run through Normanton all the time. On November 29th I came on duty at 7.25 a.m. to work the 7.55 a.m. express, Bradford to London, and the 3.0 p.m., London to Bradford. I left duty the previous night at about 8.30. My train left London at 3.0 p.m., and nothing of an unusual character occurred between London and Nottingham. I had a late start from Nottingham of three minutes, waiting the arrival of the Leicester train. Engine 1,506 was attached at this station. On leaving Nottingham the train consisted of engine, tender, and five vehicles, equal to seven, made up in the following order: bogie third-class brake next the tender, three bogie composites, and a van in the rear in which I travelled. I was delayed three minutes by conditional stop at Chesterfield, and two minutes approaching Swinton by signals being at danger. At Sheffield two carriages were attached in the rear, and one of them was slipped at Masboro' and the other at Cudworth. On approaching Goose Hill junction, I noticed the distant-signal at danger, and the driver reduced speed accordingly, but when the home-signal came in view I noticed it was off. I also noticed that the distant and home signals worked from the station south box were off, and that the distant-signal worked from the station north box was at danger. Shortly after passing the station south box I noticed that the station north box home-signal and the Normanton north junction distant-signal were off for us to proceed. The speed of the train through Normanton was slow until I sighted the station north box down home-signal lowered, and it was then increased. I do not think the train exceeded a speed of 15 miles an hour at any time between the station south box and the point of collision. When my van was passing the station buildings I heard a whistle as though something unusual was about to take place, and I placed one hand on my hand-brake, and the other on the valve of the continuous brake, but just at this moment I found the continuous brake had been applied by the driver. I noticed nothing more until the collision took place. At this time I had hold of my hand-brake, and I felt a slight shake, but nothing more. I remained standing with one hand on my brake. I estimate the speed of the train at the time of the collision at about 10 miles an hour. The brake was fully applied when the collision took place. No vehicle on my train left the rails, and it could not be ascertained while at Normanton that any damage took place to any portion of the train except the

engine, but I have since been informed that on arrival at Bradford, one or more of the draw-bar hooks were found to be cracked. The collision took place, according to my watch, at 7.19 p.m. One passenger, a gentleman, complained that the collision had caused him to have a headache, and that his hat was damaged. No other complaint was made. My train left Normanton for Leeds at 8.15 p.m., having been delayed 56 minutes, and was worked from Normanton to Leeds by engine No. 422. The brake seemed to act very well.

William Henry Hickling, signalman in the service of the Normanton station joint committee, states: I entered the service of the Midland Company at Evesham about 9½ years since as porter, and remained there about 1½ years, when I removed to Coalville as shunter. I remained there about 15 months, and was then removed to Walsall as signalman, and remained there about six months. About six years since I was removed to Normanton No. 2 box, and I remained there about two years, and was then removed to No. 1 box, and remained there about six months. I was then removed to the Normanton north sidings, and remained there nearly four years. I have been learning only at Normanton station north box for about three weeks, and on November 29th I went on duty at 2 p.m. to remain until 10 p.m. I left duty on November 28th at 6 p.m. This was the first day I had had charge of the duties at the Normanton station north box. At 7.13 p.m. I received four beats on the bell, without the "Call attention" signal, from the west box, indicating that a shunt required to be made from the down platform line, and in consequence of receiving this signal I lowered the down platform line home-signal. At 7.15 p.m., just before the carriages arrived at my box, I received the signal, three beats, pause, two beats, preceded by the "Call attention" signal for the down express. As the carriages were passing my box I shouted to the men, telling them that the down express was signalled, and

I asked them to be quick and bring the carriages on to the up line. At 7.13 p.m. I received the "Is line clear" signal from the north junction for the Lancashire and Yorkshire train from York, and "Train entering section" signal for the same train at 7.15 p.m. This train passed my box at about the same time as the empty carriages. When the empty carriages had got beyond the cross-over road points I endeavoured to set them for the carriages to pass from the down to the up-line, but I found that I could not do so. I then found that the down home-signal which I had lowered for the carriages to leave the station was still lowered. I at once placed it to danger, but at this time the engine of the express was passing it, and the collision very shortly afterwards took place. On receiving the bell signal from the station west box for the Midland down express I forwarded it to the north junction in order that the signals worked from that junction might be lowered for the train to pass as soon as the carriages were clear of the down line, and the signalman at the north junction had accepted the block signals in the usual way, and had lowered his signals for the train to proceed when it was passing through the station. The only way I can account for forgetting to place the platform down home-signal to danger after the carriages had passed it is that my attention was directed to advising the men with the carriages that the down express was signalled, and requesting them to clear the line as quickly as possible to allow it to pass, and attending to the signalling of the Lancashire and Yorkshire up train. It was not at all a case of forgetting the carriages, but of forgetting to put the signal up to protect them, so that if I had been working block of any kind I would not have permitted the express to approach. I felt quite capable of working the box, and had been fully instructed about it.

Inspector Browne, who examined and passed this signalman, says that he was properly instructed and is a good, steady man.

Conclusion.

This collision, which would have been a serious one if the Lancashire and Yorkshire carriages run into by the Midland express had been loaded instead of empty, was due to the omission of the signalman in Normanton station north signal-cabin to put back to danger the platform line down home-signal which he had lowered for the empty carriages to be drawn forward, so that these carriages, which, owing to the arrival of a train upon the up line, he was unable at once to cross to their destination on the up side, were left standing without any signal protection.

The express train was signalled on to him from the central cabin in the usual manner about the time that the carriages were passing his box, and he sent forward the signal to the north junction box, telling the men in charge of the carriages to look sharp, but although he kept his down distant-signal at danger he quite forgot to put back his home signal.

The driver of the express, finding the distant-signal at danger, was running cautiously into the station, but when he saw that the home-signal was off he naturally thought that it had been lowered for his train, and he applied steam and increased the speed of his train to probably about 20 miles an hour.

Owing to the smoke and steam which was hanging about, he did not see the red light at the tail of the carriages until he was, according to his estimate, about 60 yards from it, and, although his continuous brake was promptly applied and acted well, he was unable to bring his train to a stand before striking the empty carriages with such violence that they were driven forward about 350 yards.

I do not consider that the driver is to be blamed, for the proper signal for the line on which he was running was off, and it is easy to miss seeing the position of a red tail light, however good a look-out may be kept.

At the time of the collision the signalman had been on duty for about 5½ hours.

Normanton station is one of those which are for purposes of block working considered as terminal stations, and there is no block between the north and south signal-boxes. The working is to some extent controlled from the central boxes on the up and down sides of the platform, inasmuch as the signals at the entrance to the

station are ordered to be kept at danger until a disc, giving permission for them to be lowered is turned by the signalman in one or other of the central boxes, but the signalmen in these boxes have no physical control over the out-of-door signals, and when once a train has passed the signal-box at the entrance of the station the driver has no signal to look to before the signal for leaving the station at the other end, which is worked from a box having no electrical connexion with that from which is worked the signal admitting him to the station.

It is quite clear that with trains running through the station, of which there are several, this system does not afford sufficient protection, and that something further is required.

The signalman in this case did not forget that the carriages were obstructing the down line, but he forgot to put up the signal behind them, and it is more than probable that if, before allowing the express to approach, he had been obliged to go through the operation of giving permission for it to come forward at caution, he would have remembered to put back his home-signal, and so have averted the collision.

It is necessary at stations such as Normanton to modify the ordinary absolute block working rules to some extent, but where through trains are run some permissive system should be adopted, and in the case of Normanton this could be more easily done if the signalmen in the central signal-boxes had control over signals which are undoubtedly necessary to cover the facing points worked by them, and which signals do not exist at present.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

F. A. MARINDIN,
Major, R.E.

APPENDIX.

PARTICULARS OF DAMAGE TO LANCASHIRE AND YORKSHIRE CARRIAGES AT NORMANTON, 29th ultimo.

Composite, No. 174.—End of third-class compartment smashed, and brake-work and under-carriage broken.

Third-class, No. 1,534.—Body moved, buffer-rods and axle guard stay-rods bent, and springs broken.

PARTICULARS OF DAMAGE TO MIDLAND ENGINE, No. 1,506, at NORMANTON, November 29th.

Chimney, buffer-plank, and vacuum-brake pipes broken, and smoke-box front knocked in.

DAMAGE TO PERMANENT-WAY, &c.

Three 40-lb. cast-iron chairs and one sleeper broken. Two angle blocks of points pulled out of ground, two cross-rods broken, and three badly bent. A few roller-blocks were also broken.

DAMAGE TO MIDLAND ROLLING STOCK.

Nil.

MIDLAND RAILWAY.

EXTRACT from CODES of TELEGRAPH BELL SIGNALS between the Passenger Station East, West, North, and South Signal Boxes, Normanton.

The approach of trains and engines running between the above posts must be signalled forward to the post in advance, in accordance with the under-mentioned codes; and in order that the signalman giving the beats may know that he is correctly understood, the signalman receiving the beats must acknowledge them by giving a corresponding number of beats in reply.

In the event of an incorrect number of beats being given in reply, the beats must be repeated until correctly acknowledged.

Bell Signal Codes.

Passenger Station West Box to Passenger Station North Box.

To call attention	-	-	-	-	1 beat.	
Passenger train going to Midland line, leaving down platform line	-	-	-	-	3 beats, pause 2 beats.	
Light engine, or engine with empty carriages attached leaving down platform line	-	-	-	-	4 beats	These signals must be given without the "Call attention" signal.
Light engine, or engine with empty carriages attached leaving down through line	-	-	-	-	5 "	

Between all Posts.

Obstruction danger signal	-	-	-	-	6 beats.	See Rule 93.
Stop and examine train	-	-	-	-	7 "	See Rule 95.
Signal given in error, train last signalled not coming	-	-	-	-	8 "	
Train passed without tail lamp to post in advance	-	-	-	-	9 "	
Train passed without tail lamp to post in rear	-	-	-	-	4 "	pause, 5 beats } See Rule 96.
Train divided	-	-	-	-	10 "	See Rule 99.
Train or vehicles running away	-	-	-	-	12 "	See Rules 97 and 98.
Testing bell signal	-	-	-	-	16 "	
Testing controlled signals	-	-	-	-	20 "	

The Bell signals from 6 beats to 12 beats, inclusive, must be given without the "Call attention" signal; when applying to the up through line they must not be followed by any beats; when applying to the up main line they must be followed by a pause and one beat; when applying to the down main line by a pause and 2 beats; when applying to the down through line by a pause and 3 beats; and when applying to the dock lines by a pause and 4 beats.

One minute before a train is actually ready to leave the Normanton passenger station, the signalman on duty at the passenger station east box, or the passenger station west box, as the case may be, must pass forward the bell signal to the south box or to the north box, as the case may be, to prevent any delay to the train, and avoid the necessity for drivers having to whistle for the signal to be lowered.

EXTRACT from APPENDIX to WORKING TIME
TABLE BOOK.

*Stations and Junctions Signalled as Terminal
Stations.*

Referring to Rules 49 B, 49 C, and 49 D, in the Company's Book of Rules and Regulations, drivers of trains, when approaching any of the following stations, must understand that the signal or signals lowered or turned off to give them permission to enter, simply give them permission to run into the station, and not through it; and they must be prepared to stop at any point the circumstances of the case may render necessary, unless the line is clear, and the signals applicable to the line on which they are running are lowered or turned off, giving them permission to leave the station at the other end.

Normanton - Passenger station.
* * * *

Printed copies of the above report were sent to the Midland and Lancashire and Yorkshire Railway Companies on the 15th January.

MIDLAND GREAT WESTERN RAILWAY OF IRELAND.

Board of Trade, (Railway Department,)
1, Whitehall, London, S.W.,

18th August 1889.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 24th June, the result of my enquiry into the circumstances connected with the fatal accident which occurred on the 14th June at Ballyhaunis station on the Midland Great Western Railway of Ireland.

In this case a harvestman, named Michael Waldron, an intending passenger from Ballyhaunis to England, who had an old varicose ulcer on his left leg, had this ulcer wounded just after making his way into a crowded compartment of a special harvestmen's train which had arrived at Ballyhaunis at about 11.50 a.m., and died from hemorrhage from the wound shortly after being extricated from the carriage.

The enquiry was attended by the Rev. W. Doran, C.C., and by a solicitor representing the deceased.

Description.

Ballyhaunis is a roadside station on the single line between Castlerea and Ballina. It is a passing place provided with up and down platforms; the points and signals are properly interlocked and are worked from a raised signal cabin. The up platform is about 110 yards long by an average width of about 4 yards. The station buildings are on this platform and comprise a waiting shed, 6 yards by 5 yards.

Evidence.

1. *James Shaw*, outdoor traffic clerk for five years, and assistant in the traffic department for 10 years previously.—I remember arrangements being made for the carriage of harvestmen on the 12th April 1889. A special train, consisting of 12 or 13 carriages, left Ballina for Dublin in accordance with time table dated 19th March 1889. Most of the vehicles would be third-class carriages with six compartments, each compartment holding 12, which would give accommodation for about 900 in the train. On arriving at Ballyhaunis there were about 300 harvestmen in the train, and there were 125 men waiting for the train at Ballyhaunis, and there were only 51 additional harvestmen to be picked up at five stations after leaving Ballyhaunis, making the total number not quite 500. I was not present at Ballyhaunis when the fatal accident took place. Up to the 11th June there had been one special train every Friday, but from the 11th June to 28th June additional trains were advertised to run on the dates specified in the bill dated June 1st. On Tuesday, 11th, two special trains left Ballina at 9.20 and 9.30, and they carried 1,163 passengers, of whom 334 were booked at

Ballyhaunis and 262 at Foxford. I am not able to state whether the trains were equally loaded. On Friday, 14th, four special trains were run, viz., two from Ballina, one from Westport, and one from Claremorris, and, in addition, two others were run late in the day from Ballyhaunis. The first two were from Ballina at 8.58 a.m. and 9.30 a.m., then one from Westport at 9.20 a.m., and one from Claremorris at 11 a.m. The late trains were one from Ballyhaunis at 11.10 p.m. and another at 11.30 p.m.

The 8.58 a.m. from Ballina consisted of 11 carriages and a van.

The 9.30 a.m. from Ballina consisted of 11 carriages and a van.

The 9.20 a.m. from Westport consisted of 12 carriages and van.

The 11.0 a.m. from Claremorris consisted of 8 carriages and 2 vans.

The 11.10 p.m. from Ballyhaunis consisted of 11 carriages and van.

The 11.30 p.m. from Ballyhaunis consisted of 8 carriages and 2 vans.

Total, 61 carriages and 8 vans.

The total number of passengers conveyed was 4,697. I cannot state the number of passengers conveyed in any particular train. The greatest number of men booked at any one station on the 14th was at Foxford, viz., 916, and the next greatest number was at Ballyhaunis, viz., 898. I was informed that the deceased Michael Waldron lost his life in the train leaving Ballina at 8.58 a.m. I have nothing to do with preventing the overcrowding of any particular train. I am guided as to providing sufficient accommodation by the experience of previous years; and on this 14th June I had calculated there might be 3,000, and I provided accommodation for 4,500. On being informed by telegraph from Ballyhaunis that more tickets had been issued than I had anticipated, I provided the two additional trains, which had to be sent from Dublin, and I believe they left about 3 p.m. I believe that it was at Ballyhaunis and all the stations on the Dublin side of it that accommodation was wanting in the morning to convey those wanting to go. This year harvestmen have gone away earlier than in former years, the numbers being as follows:—

On 13th June 1884	-	1,033	on whole system.
„ 14th June 1885	-	3,806	„ „
„ „ 1886	-	2,221	„ „
„ „ 1887	-	1,947	„ „
„ „ 1888	-	1,926	„ „
„ „ 1889	-	6,104	„ „
„ 20th June 1884	-	2,830	„ „
„ „ 1885	+	4,659	„ „
„ „ 1886	-	6,448	„ „
„ „ 1887	-	6,433	„ „
„ „ 1888	-	6,234	„ „
„ „ 1889	-	1,651	„ „

I had no intimation of any particular rush being probable on the 14th June 1889. I received no message to that effect the previous day.

2. *William Toner*, station-master at Ballyhaunis, 10 years' service.—I have been at Ballyhaunis since Oct. 1888. I had not previously been a stationmaster in Mayo out of the four years I have acted as such. On the 12th April the harvestmen began to assemble in numbers about 9 a.m., the special train being due at 12.15, and I booked altogether 125 passengers. Before the train came up the 125 were all on the platform, accompanied by about 100 friends. I, and eight men assisting me, got the people back from the edge of the platform clear of the train, the bulk of them being in the neighbourhood of the booking office. As the train was drawing up a number rushed on to the carriages to open the doors and get seats, and in doing so Patrick Finn, in trying to get into the eighth or ninth out of the 12 vehicles of which the train was composed, must have fallen on to the ballast and the three wheels of the ninth carriage passed over him and broke his thigh and caused his death in about two hours. The train at the time was moving at a slow speed and stopped before the tenth carriage reached him. The platform was not particularly crowded, but it was a wet morning and the people were rather rough from drinking. It was sworn at the inquest that Finn was a temperate man. There was no overcrowding in this train. There were a number (about three) of the constabulary on duty at the station when Finn was killed.

On the 13th June I had heard there would be 200 or 300 harvestmen going by the train next day, and about 8.30 a.m. on the 14th they began to assemble at the station in large numbers, and by 12.15 p.m. the booked time of the special train, 898 had been booked. Previously to this train there had been two other trains, one reaching this at 11.30, and the next about 11.45. Before the arrival of either of these two I had been informed by telegraph that there would be no room for any passengers from Ballyhaunis to enter them. I did my best to inform the harvestmen that they could not go by either of the two first trains, and I intended to run the first one past the platform and back into a siding, but seeing the passengers on the platform rush towards the train I thought it safer to stop it at the platform, and run the following train on to the down line and then into a siding to allow the mail to pass. I heard afterwards that Waldron had tried to enter the front compartment of the eighth carriage from the engine of the first train and that he had got in. I was at the time in the 6-ft. space trying to remove the people who had got into the 6-ft. space out of the way of the second train which I was going to bring in on the down line, and I then heard that a man had been killed in the carriage just under the door of which I was standing. I got up on to the step and was prodded down by a pole, when a sergeant of police who was beside me opened the door, which was unlocked; he first endeavoured to release a man named Byrne whom we thought was injured, but then ascertained that it was a man on the top of him who was really the one dead; this man Waldron, who had varicose veins, was being stood on by other persons and had had his veins injured; he was bleeding profusely, and died almost immediately. In the compartment in which this occurred there was sitting room for 28 people, but I cannot say how many were in it; there were about six standing up—three men had made their way into this compartment after the train had arrived. On this occasion I had the assistance of 10 men besides myself, and there were seven policemen and a sergeant. I imagine some 200 harvestmen must have got away in the two first trains, leaving about 700 still to be disposed of. When the train due at 12.15 came up it was full, with the exception of two vans, and into those I put about 50 out of the 700 left, doing this without much difficulty. The next train, the 9.30 a.m. from Ballina, arrived about 12.20 p.m. and it was full, and none of the 650 were able to go in it, and it was not till after this train left, soon after 12.45, that I wired to Broadstone that I had about 600 harvestmen for whom I required carriages. I was informed in reply that arrangements would be made, and that two special trains would leave Broadstone about two o'clock. There being room in the ordinary 2.15 p.m. train from Ballina, I sent away over 200 harvestmen by it, and the remainder, between 400 and 500, had to remain till the arrival of the specials at about 11 p.m. Most of them went away by the first special, about 11.10 p.m., and about 50 went away by the second at about 11.30 p.m. I had informed Broadstone the previous evening that it was expected a large number of harvestmen would require accommodation. I think there might have been perhaps 200 persons on the platform in addition to the harvestmen.

Conclusion.

From the foregoing evidence and from the depositions taken at the coroner's inquest, it appears that on Friday 14th June an unusually large number of harvestmen presented themselves at various stations on the Mayo line to be taken by special train as passengers for the North Wall, and thence to various parts of England. On the corresponding date in the five previous years the average numbers conveyed from the whole of this railway company's system had been 2,187, the maximum having been 3,806 in 1885; and on the Friday in the following week the average numbers had been 5,321, with a maximum of 6,448 in 1886. As two special trains, conveying

1,163 harvestmen, of whom 334 had joined the trains at Ballyhaunis, had been run from Ballina upon the previous Tuesday, 11th June, the official charged with the arrangements for the conveyance of harvestmen had considered that he was finding sufficient accommodation on the 14th June by arranging for the despatch of four special trains, two from Ballina, one from Westport, and one from Claremorris, containing in all 43 carriages and four brake vans, capable of holding about 3,000 persons; owing, however, to the unexpectedly early hay harvest in England unusually large numbers of harvestmen presented themselves at the various stations, and no less than 898 had been booked at Ballyhaunis in the course of the morning. When the first special train from Ballina arrived at Ballyhaunis (where it and the following one had to cross the down limited mail) at about 11.30 a.m., it was quite full, as the station-master had been informed by telegraph, and as he had endeavoured to explain to the crowds of harvestmen on the platform. There was, however, a rush made upon the carriages as the train drew up at the platform, and a number of harvestmen managed to find room for themselves. The deceased, his brother, and another man had made their way into the front compartment of the eighth carriage from the engine—his brother says by opening the door. The carriage appears to have been overcrowded (there having been from 32 to 40 harvestmen in the compartment intended to hold 28), when the three men made their way into it, and in the commotion that ensued the deceased was thrown on to the floor, his ulcerated leg trampled on, and hemorrhage ensued, from the effects of which he died shortly after being extricated from the carriage.

Of the 898 harvestmen booked at Ballyhaunis on the morning of the 14th June about 200 got away in the first two trains, 50 in the third, the fourth was quite full when it arrived at the station, and none were sent in it. About 200 were despatched by the 2.15 p.m. regular train, the remaining 450 having to wait for the arrival of two extra special trains for which the station-master had wired to Broadstone about 12.45 p.m., and which arrived at Ballyhaunis between 11 and 12 p.m., and returned to Dublin one at 11.10 and the other at 11.30 p.m. The staff at Ballyhaunis station on the 14th June consisted of the station-master and 10 others; a police serjeant and seven policemen were also on duty at the station. These men, though of course insufficient to control the movements of nearly 900 harvestmen, and some 200 of their friends who were seeing them off, were as many as could reasonably be provided for the occasion.

It is by no means easy to see what effectual measures can be taken to arrange for the reasonably prompt conveyance of such unexpectedly large numbers of harvestmen as presented themselves as passengers for Dublin at the various stations on the Mayo line on the morning of the 14th June. Judging by the experience of previous years, it did not appear unreasonable to suppose that four special trains capable of carrying about 3,000 persons would be sufficient, though the event, unfortunately, proved the contrary, the trains being already full when they reached Ballyhaunis; and the death of the unfortunate man in trying to obtain room in an already over-full carriage was thus brought about.

The fatal accident to a harvestman which occurred at Ballyhaunis station on the 12th April appears to have been due to the deceased having made a rush at a carriage door as the special train, by which he wished to travel, was drawing up at the station; in doing so he fell upon the line, and was run over by the wheels of the following carriage, had his thigh broken, and died shortly afterwards. On this occasion there were only about 125 harvestmen waiting to go by the special train, in which there was ample room for them if they had only had patience to wait until the train had stopped.

One means that might, I think, be adopted on future occasions when a large influx of harvestmen is expected, would be to start one train from Foxford, and another from Ballyhaunis, at which two stations they seem to congregate in the largest numbers.

Another means, though not so easy to accomplish, would be to endeavour to induce the men to spread their departure over several days, instead of all crowding into the stations on one particular day. On the present occasion special trains were advertised to leave Ballina on June 11, 14, 18, 20, 21, 25, and 28, and if on future occasions it were stated in the posters distributed in the district that it would add much to the comfort and convenience of the harvestmen if they could arrange to spread their departure over the several days on which the special trains are advertised to start, it might be attended with advantage.

As to the suggestion that tickets should be issued only to the amount of the probable accommodation likely to be available at the various stations (the information being forwarded by telegraph from one station to another), it might, no doubt, be acted on with advantage.

With regard to the complaint as to the insufficiency of the platform, and waiting-shed accommodation at Ballyhaunis, I do not think there is just cause for it.

The up-platform, which is the one liable to be crowded, contains about 370 square yards of standing room (allowing a clear space of 2 ft. next the edge of the platform) or space for about 1,110 persons; the waiting-shed on this platform has an area of about 30 square yards, or space for about 90 persons, and there is in addition the shelter afforded by the booking office.

This accommodation is in excess of that usually provided at country stations, though in view of the numbers occasionally using Ballyhaunis some additional shelter on the platform would be very useful.

The Assistant Secretary,
Railway Department, Board of Trade.

I have, &c.,
C. S. HUTCHINSON,
Major-General, R.E.

Printed copies of the above report were sent to the Company on the 7th September.

MIDLAND GREAT WESTERN RAILWAY OF IRELAND.

Board of Trade, (Railway Department,)
1, Whitehall, London, S.W.,
30th October, 1889.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 4th instant, the result of my enquiry into the causes of the collision which occurred on the 30th ultimo, at Carrick-on-Shannon station, on the Mullingar and Sligo line of the Midland Great Western Railway of Ireland.

In this case a down special train of empty waggons came into collision (engine with engine) with the 9 p.m. up mixed mail train from Sligo for Mullingar due at Carrick at 11.17 p.m., but which did not arrive at that station till 11.43 p.m.

The collision occurred on the up loop line a short distance on the Sligo side of the facing-points. There was only one passenger in the mail train and neither he nor any servants of the company were injured.

In the mail train—which consisted of engine and tender, 12 waggons, 2 carriages and a brake-van—the engine was damaged, but no wheels were knocked off the rails.

In the special train—which consisted of engine tender, 32 empty waggons, and a brake-van, the brake power being derived from a steam brake for the engine and tender, and from hand brakes for the tender and brake-van—the engine had its buffers and buffer beam damaged, several waggons were buffer-locked, and the third one from the tender was knocked off the rails.

Description.

Carrick-on-Shannon station is a passing place on the single line between Longford and Sligo, the distance between the facing-points being about 215 yards. The down home-signal, which is on the same post as the up home signal, is about 135 yards on the Sligo side of the facing-points at the up end of the loop; the down distant-signal is about 265 yards from the facing points or 400 yards from the down home-signal; there is a disc signal working with the facing-points, which shows a green or red light according as the facing-points are lying for the down or up loop line; these three signals are all visible from a considerable distance; the signal cabin, in which the levers working the points and signals are concentrated and interlocked, is situated on the down platform 7 yards on the Sligo side of the home-signal post or 142 yards on the Sligo side of the facing-points at the up end of the loop. Carrick is approached from Longford on rising gradients of 1 in 112 for 150 yards, 1 in 53 for 115 yards, and 1 in 100 for 270 yards, the latter terminating close to the Longford end of the loop, whence through the station the line is level. The collision occurred at the Longford end of the loop close to the crossing of the up and down lines.

Evidence.

1. *Mathew Connell*, porter; five years' service, three years porter at Carrick.—I came on duty on 30th September at 7.50 p.m., to remain till 7.30 a.m. on the 1st October. I was in charge of the signals at the station. The up mail from Sligo arrived at 11.45 p.m., 28 minutes late. When the train arrived the van, the last vehicle in the train, was not quite up to the platform, so I gave the driver a light to go ahead to bring the van up to the platform; he moved ahead about a carriage length; I then told porter Carroll

to put the parcel post and mails into the van, while I went to check the tickets, and while I was doing so the collision occurred. At this time the mail train had got into backward motion, and the effect of the collision was to drive the train further back. I was in a third-class carriage, when the collision occurred, and between it and the engine there were 12 waggons. We ran back some distance before we stopped. The special train stopped short after the collision, which occurred at 11.48. There was only one passenger in the train, and he, as he woke out of his sleep, at first thought I had assaulted him. He was not hurt. I had taken off both distant and home-signals for the mail to come in, and I had put them both to danger after the mail had arrived; but the down signals were at danger, and I had never taken them off. When the mail whistled I lowered the signals for it. About half-an-hour before this I had shifted the points at the up end of the loop and made them right for the up line. I had expected the special train to cross the mail at this station, as I had seen a notice which had been issued that the special could cross the mail at Carrick, and the staff arrangements were made accordingly, but owing to the usual length of the mail train I had made the points for the up road in case the engine might have to pass through them on arriving. When I heard the mail coming in, I had looked towards Longford, and am sure the special was not at that time within two miles of the station. The lamp was burning in the signal at the facing-points. I had lowered the signal for the down train, due at 8.8 p.m., and I put it up after the arrival of that train, and I believe it was working properly; I know it was alight, and I saw the back light shortly before the collision; the back light shows the same whether the signal is off or on. The driver of the special train told me that he had heard at Dromod that the up mail had been waiting half-an-hour for him at Carrick, and he said that the distant-signal was down for him, and I said that was impossible. The collision took place on the up road, and the engine of the empty train was on the up road after the collision, and one of the waggons, about the fourth from the engine, was off the road, and then about three others. The points were not damaged by the collision. I heard no whistle before the collision. Carroll was at the rear of the train when the collision occurred.

2. *John Carroll*, porter; 22 years' service, five years at Carrick.—I came on duty about 11.30 a.m., and usually leave work about 3 a.m., having about five hours off during the time; this occurs about every other month. I had nothing whatever to do with the points or signals when the collision occurred, but I know by the light at the disc signal that the points at the up end of the loop had been made right for the up line at about 10.45 p.m. I was on the platform when the mail arrived, but I do not know whether it was late or not. It moved forward about four yards after it arrived to put the van to the platform, and the collision occurred about four minutes afterwards, and before the parcel post had been put into the van. The collision took me unawares, there having been no whistling; the mail was setting back, without my knowing why, when the collision occurred. It had set back about 15 yards before the collision, and after it part of the train went back through the points at the Sligo end of the loop. The engine of the special train stopped opposite the booking office.

3. *Thomas Lynell*, station-master; 30 years' service, 2½ years station-master at Carrick.—I was not on duty when the collision occurred, but I came out immediately on hearing the crash. The engine of the mail was then opposite the booking office in backward motion, and the engine of the special train was at the crossing near the up end of the loop. The driver of the special train told me that the down distant-signal was lowered when he passed it, and he said he was told at Mullingar that he was to cross the mail at

Boyle. I then went to look at the down distant-signal, going for the purpose about 50 yards on the Longford side of it, and found both it and the disc-signal at the points showing good red lights, and also the down home-signal; when the disc-signal shows a red light to a down train, it shows a white back light to the platform. The back light of the distant-signal is always white. On coming back I told the driver that his statement could not have been correct as the distant-signal was interlocked with the points; and the driver made some reply, but said nothing about the signals having been changed. The engine was on the up road after the collision, the third waggon from the engine was off the road, and several more were buffer-locked. In consequence of the occasional length of the mail it is customary to set the points at the up end of the loop right for the up train before its arrival. There was nothing wrong with the locking apparatus. The signals are all worked from the box, and also the points at the ends of the loop. The collision occurred about 11.45 p.m., about four minutes after the arrival of the mail.

4. *Peter Lamb*, driver; 35 years' service, 20 years driver.—I started from Sligo on the 30th September at 9 p.m. with the 9 o'clock mixed mail train for Mullingar. I had to wait 37 minutes at Collooney for the 4 p.m. down train from Dublin, and reached Carrick at 11.43 p.m., 26 minutes late, with engine and tender, 12 waggons, two carriages and a van, 15 vehicles in all. After arriving Connell told me to draw ahead to bring the van to the platform. I did so at once, stopping about the crossing near the up end of the loop, and I noticed that the disc was shewing white to me. After standing two or three minutes, I saw the engine of the special train close by the distant-signal, and on looking a second time, thinking it was coming too fast to stop, I set back and had only just got the train into motion, when the engine of the special struck my engine, and increased my motion backwards, and I did not stop till I got to the other end of the platform. I could not say at what speed the other engine struck mine, but the speed was pretty sharp. The driver of the special was pulling up. I whistled the alarm whistle when the engine of the special was on the bridge close to the points; I did not hear the other drivers whistle. On the signalman telling me to move ahead, I told him I should block the down road, and he then said the signals were at danger, and I looked back and saw the down home-signal at danger. In this case, if the disc were showing a red light, the driver should stop outside the points. The driver of the special train told me after the collision that the distant-signal had been off for him, and that he had seen a white light near the points, which he had taken for the disc-signal; and I told him he must have mistaken this for my head light, as the disc only shows green and red to the front. The buffers of my engine were broken, and the framing bent, and a waggon buffer was cracked, but no wheels were knocked off the rails. The engine of the special did not stop dead after the collision. I was not aware till I arrived at Carrick that I was to cross the special there.

5. *John Carroll*, driver; 17 years' service, 3½ years driver.—I have been accustomed to work regularly on the Sligo line, both as fireman and driver. I commenced work on the 30th September at 11.30 a.m., and after attending to my engine I started from Dublin at 2.15 p.m. with a special train of empties for Ballinasloe. I reached Mullingar about 7.40 p.m., having been detained on the road from various causes. At Mullingar my destination was altered to Boyle, and I started from Mullingar at 8 p.m., arrived at Longford at 9.30 p.m., and left Longford at 10.20 p.m. with a train consisting of engine and tender, running engine first, 35 empty waggons, and a brake-van. The brake power consisted of a steam-brake applying to the six wheels of the engine and tender, of the tender hand-brake, and the van-brake. At Mullingar I was

told I had to cross the up mail at Boyle, where it was due at about 11 o'clock, and I had not received instructions to the contrary before the collision, though I was detained so long at Longford shifting waggons. I had no detention between Longford and Carrick, except for changing the staff. On arriving within about $1\frac{1}{2}$ miles of Carrick I saw both distant and home-signals showing white lights, and these signals remained off until I had approached to within a short distance of the facing-points. I had passed the distant-signal and had got within a short distance of the facing-points when the home-signal was thrown up to danger. I also saw a white light near the points, which I at first thought was a hand-light, and that the disc light might not have been burning. It was only on my engine coming to the points that I realised the light was on the buffer-beam of the engine of the up mail. My engine struck the mail engine near the crossing at a speed of two or three miles an hour. The mail was in backward motion. I shut off steam when I was on the bridge on realising that the light I had seen was on the buffer of the mail engine, I did not whistle before the collision. It is customary with a long train to be brought in on the up line on account of the falling gradient. When I saw the home-signal thrown to danger my engine was 20 or 30 yards from the facing-points, at which time I was running at a very slow speed. My engine had its buffer-plank bent and the plungers broken, and some of the waggons were buffer-locked and two damaged, and three waggons got off the road afterwards. I had no idea I should meet the up mail at Carrick, and the guard had not told me so at Mullingar. It was 11.45 p.m. when I stopped at the crossing after the collision. On realising that a collision was imminent I had the hand-brake applied to the tender, and then I applied the steam-brake, being afraid of doing so at first on account of snapping a coupling on the incline. I had three waggons to leave at Carrick.

6. *John Conneely*, fireman; 5 years' service, 19 months fireman.—I have been 10 months with Carroll; I had been on the Sligo road, learning it, and since then I had made three trips on it. I was with Carroll on the 30th September. We were about 50 minutes shunting at Longford, and on leaving Mullingar I heard we were to cross the up mail at Boyle and never heard of any change being made in the crossing place. On approaching Carrick I saw the distant-signal a long way off showing clear, and this signal remained off until we passed it, as I had seen shortly before reaching it. I first saw the home-signal about $1\frac{1}{2}$ miles off, and it was showing a green light, and it remained showing a green light until we were close to the facing-points, when on looking at it again, I

saw it changed to red. I never saw the disc signal at all. About the distant-signal I saw a white light near the facing-points, and at first thought it was a hand light, and continued to think this until my engine struck it, when I found it was the light on the engine of the up mail. Carroll shut off steam just before the facing-points, and I put on the steam brake just at the facing-points on seeing steam coming from the mail engine. I never put on the tender hand brake. My place was on the left side of the engine. Our speed on striking the other engine was not more than two miles an hour. I had expected we should run in on the down road, and it was only on seeing the other engine that I realised we were running in on the up road. I heard no whistle from the mail engine. I could not say whether the mail engine was going back when we struck it.

7. *Patrick Wiven*, goods guard; five years' service, $1\frac{1}{2}$ years goods guard.—I know the Sligo line well. I left Dublin at 2.15 p.m. on the 30th September as guard of a special train of empties for Ballinasloe, but at Mullingar we were told to go to Boyle instead. We reached Longford at 9.40 p.m., and left at 10.37, having been occupied in shunting empties. The train consisted of 32 empty waggons and a van, having next to stop at Carrick. I was told at Longford by the station-master that we were to cross the mail at Carrick, and I told this to the driver when he was on the ground beside his engine. About a quarter of a mile from the Carrick distant-signal I saw it showing a white light, and I saw it changed to red when the train was half-way past it. When just inside the distant-signal I noticed for the first time the home-signal, and it was showing red. I could not see the disc-signal, owing to the curve in the line and the train. The collision took me unawares, the speed being about seven miles an hour. I do not think we went more than three yards. My brake was off when the collision occurred. I had not put it on on seeing the distant-signal put to danger, being afraid of breaking the train in halves. No couplings were broken, but the third wagon was off the road, and six or seven were buffer-locked. The collision took place at 11.47. I thought we should have run into Carrick on the down loop line. Long down trains are sometimes taken in on the up road. I am quite sure I told the driver we were to cross the up mail at Carrick. At Carrick the driver told me that he had been told at Mullingar he was to cross the mail at Boyle.

Carroll recalled.—I have no recollection of being told at Longford by Wiven that the mail was to be crossed at Carrick instead of at Boyle.

Conclusion.

This collision was caused by the negligence of the driver of the down special train in not paying proper attention to the signals when approaching Carrick station. Notwithstanding the driver's and fireman's statement to the contrary, it is most improbable from the interlocking of the points and signals that the down home-signal and the facing-point disc can have been showing right for the down loop line until the engine was within a short distance of the facing-points; indeed, the guard of the train, though stating that the down distant-signal was off when he first saw it, declares that it was put to danger when about half the train had passed it, and that when first he saw the down home-signal, from about the distant-signal, it was showing a red light. It is, of course, possible that after the up mail had arrived, the signals may have been lowered for the down special train, and that then, when it was found necessary to move the mail train forward in order to bring the mail van to the platform, they may have been put to danger, and the position of the facing-points changed to prevent their being burst by the engine of the up mail, should it have gone forward as far as them. If this were the case it would be consistent with the statement of the guard who appeared to give truthful evidence; but, the fact of the down home-signal being thrown to danger when the engine of the special train was from 150 to 200 yards off, should, together with the red light which must have been

shown by the disc of the facing-points when they were set for the up road, have led the driver to conclude that he was to stop outside the loop, which he would have had no difficulty in doing, considering that he had a steam-brake for his engine and tender, and that he was ascending a gradient of 1 in 100; instead of doing this, he passed through the facing-points and struck the engine of the mail train, some 30 yards inside these facing-points at a speed of at least five miles an hour.

It had been originally intended that the up mail and down special train should cross each other at Boyle, but, in consequence of information of the running of the trains received at Longford, the station-master there decided to alter the crossing-place to Carrick, and of this change the guard states that he told the driver at Longford, the driver denying his recollection of having been told this. If he was told it makes his conduct with regard to obedience to the signals at Carrick still more blameworthy.

The driver of the special train is a man of $3\frac{1}{2}$ years' service as driver; his previous character is fairly good. Both he and the fireman had been on duty about 12 hours when the collision occurred, and, but for it, they would on their arrival at Boyle, have completed the objectionably long spell of about 13 hours work.

No blame appears to be attached to the conduct of the servants of the up mail train, the driver of which had just got into backward motion before the collision on observing that the special train would not stop in time.

It was an imprudent act on the part of the porter in charge of the signals to order the driver of the mail train to draw ahead foul of the down loop line when he knew that the down special train was within a short distance of the station, and he is greatly to blame if, as seems not unlikely, after having once taken off the down signals for the special train, he reversed them when that train was near the distant-signal.

The loop line and platforms at Carrick station are evidently too short for properly dealing with the trains, and should be lengthened. The home-signals also should be placed at the facing-points, and starting-signals should be provided.

The Assistant Secretary,
Railway Department, Board of Trade.

I have, &c.,
(Signed) C. S. HUTCHINSON,
Major-General, R.E.

Printed copies of the above report were sent to the Company on the 18th November.

NEATH AND BRECON RAILWAY.

Board of Trade, (Railway Department),
1, Whitehall, London, S.W.,
1st August 1889.

SIR,

In compliance with the instructions contained in the Order of the 18th ultimo, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances which attended the accident, that occurred on the 13th ultimo, between Cray and Devynock stations on the Neath and Brecon Railway.

The engine and two front coaches of the passenger train, which is due to leave Neath at 3.30 p.m. for Brecon, ran off the rails.

No persons were injured.

The passenger train consisted of a six-wheel coupled saddle-back tank-engine, which was running funnel in front, a third-class, a composite, another third-class carriage, and a brake-van, in which the guard in charge was travelling. The general manager and an acting inspector of the Manchester, Sheffield, and Lincolnshire Railway Company were also travelling in the brake-van.

The train left Neath five minutes late. The engine, which belonged to the Neath and Brecon Railway Company, was fitted with a screw-brake, and there was a screw-brake on the van at the tail of the train.

The coaches belonged to the Manchester, Sheffield, and Lincolnshire Railway Company. They were fitted with the automatic vacuum-brake, which could not be applied, as the engine was not fitted with it. The train stopped at all stations, and when it was about $1\frac{1}{2}$ miles north of Cray station, and was running at a speed of about 25 miles an hour down an incline of 1 in 52, the near side leading-wheel mounted the near side rail, ran along the top of the rail for about 20 feet, and then dropped outside, and the off-side leading-wheel dropped inside the off rail. The driver and guard

applied their brakes at once, but the engine ran on in this position for about 100 yards, when two other wheels appear to have got off, and the rails were then spread. When the train was brought to a stand about 45 yards further on, the two leading-wheels of the engine were off the rails at the left side, the off-side driving-wheel was inside the off rail, the near side driving-wheel and the off side trailing-wheel were on the rails, and the near side trailing-wheel was in the air.

The two coaches next the engine were also off the rails. Two rails under these vehicles were broken, and five rails next to them were bent; 160 chairs were broken, and three sleepers were damaged. The springs of the engine were broken, the brake-gear and life-guards were damaged, and the third-class coach was damaged.

The engine, at the time it mounted the outside rail of the curve, was running from a curve of 18 chains radius to the right on to a short piece of straight line between the 18-chain curve to the right and an 18-chain curve to the left. It had just come off a falling gradient of 1 in 80 on to a falling gradient of 1 in 52.

The engine had been returned to the Company by the makers in May 1889 as having been thoroughly overhauled and all defective parts renewed.

The Midland Railway Company had worked the passenger traffic on this part of the Neath and Brecon Railway up to the 31st June. No passenger trains were run on the 1st July, and only one train on the 2nd July; and the permanent-way men, who had been employed by the Midland Railway Company to maintain the road, were taken on by the Neath and Brecon Railway Company on the 4th July. The permanent-way of this single line consists of a double-headed rail that weighs 74 lbs. per lineal yard. It is fished, and fixed in cast-iron chairs that weigh 28 and 30 lbs. each. The chairs are fixed to wooden sleepers 9 ft. long, 10 in. by 5 in., which are laid transversely at an average distance of about 3 ft. apart.

The permanent-way appeared to have been in good order and is well ballasted.

Evidence.

Thomas Williams, engine-driver of 3.30 p.m. train from Neath on the 13th instant, stated: Train left Neath 3.35 p.m. It consisted of a six-wheel coupled saddle-back tank-engine running funnel in front, a third-class, a composite, another third-class, and a brake-van, in which the guard was travelling. The engine and van were fitted with screw-brakes, which were in good order. There were brake-blocks on all the wheels of the engine and van. The train stopped at all stations, and while running between Cray and Devynock stations, when about $1\frac{1}{4}$ miles from Cray, the leading-wheels of the engine left the rails. The train was running at a speed of about 25 miles an hour down an incline 1 in 52, and had just left a falling incline of 1 in 80 at the time. My fireman applied the brake at once, and I reversed the engine. The guard applied his brake, and the train was stopped in about 130 yards from where the left-hand leading-wheel mounted the outside rail of the curve. I could see nothing in the permanent-way to cause the accident, which I cannot account for unless it was the failing of the left-hand leading spring, which I observed to be broken when my train was stopped. The right-hand leading spring had been changed that morning in consequence of the three bottom plates being broken. I examined the engine and all the springs before leaving Neath.

The engine commenced to work on the 23rd May after being thoroughly overhauled at the Avonside engine works, where it was built. When the train stopped, the leading-wheels of the engine were off on the left sides of their respective rails, the right-hand driving-wheel was inside the right rail, and the left-hand driving-wheel which was on the rail, I believe in its proper place. The road had spread for two or three rails back. The right-hand trailing-wheel was on the rail, and the left trailing was in the air.

The leading coach was off the rails at the right side, the second coach was also off. I cannot say its position. The next two vehicles were on the rails. All the vehicles remained coupled. The engine was slightly damaged; it was coupled to the train with a screw coupling. I had run the train with the same engine since the 8th instant. The distance from Cray

to Devynock is $3\frac{1}{2}$ miles, the time allowed for running is eight minutes. I have been 22 years in the Company's service, 14 years a driver. I started work about 7.40 a.m. that morning. I had travelled from Neath to Brecon and back on the same day with the same engine and train, and I had remarked nothing wrong with the road.

William Cresswell, guard of 3.30 p.m. passenger train from Neath to Brecon on the 13th instant, stated: The train left Neath at 3.35. It was delayed by some shunting at Neath. It travelled all right until it was about $1\frac{1}{4}$ north of Cray, when the engine ran off the rails. I had my brake slightly on, as the train was running down an incline. Mr. Cooper, the general manager, who was riding in my van, first observed the accident, and called to me to put on my brake, which I did at once, and the train was stopped about 130 yards from where the leading-wheels of the engine got off the rails. I jumped out at once. I saw nothing amiss with the permanent-way till near where the engine stopped: at this place the left rail was broken and two others behind it were bent. No one was hurt. The passengers all jumped out and went away. I went back to Cray to protect my train. I have been 16 years in Company's service. A guard the whole time. The train was running about 23 miles an hour when the engine left the rails. It was about the usual speed.

Thomas Wilkinson.—I am a guard and acting inspector on the Manchester, Sheffield, and Lincolnshire Railway. The Neath and Brecon train consisted of my Company's carriages. They are good carriages and fitted with the automatic vacuum-brake; but it was not in use, as the engine was not fitted. I was travelling in the brake-van with the guard. The train at the time of the accident was running about 20 miles an hour. I cannot say what caused the accident, but I do not think it was the coaches. The running of the train before the accident was very smooth. I could not see anything in the road to account for it. I have been 20 years in the Company's service. I was lent by my Company to the Neath

and Brecon Company, and was working under the instructions of the latter Company's manager. I was going over the line for the first time when the accident occurred.

Daniel Evans stated: I am in charge of the permanent-way gang from 20 $\frac{3}{4}$ to 23 $\frac{3}{4}$ mile-post. I have three men in my gang. I had walked my section on the morning of the accident and saw nothing wrong. My men had not been at work at the spot for some time except putting in keys and tightening the nuts. I had not been employed on the line on the 1st and 2nd July, owing to the Midland Company ceasing to work and maintain the line, but I had walked the line on those days. No

trains were run on the 1st and only one goods train on the 2nd. I was paid by the Midland Railway Company up to the 4th, and I was partly taken into the Neath and Brecon Railway Company's service on the 2nd. I got to the scene of the accident about half an hour after it occurred. I have not altered the permanent-way in any way at the place where the engine mounted, but I have renewed the chairs and sleepers that were broken and the rails that were damaged. I have been 16 years a ganger on the same length.

The general manager stated that the railway, which is a single line, is worked on the train-staff system in connexion with the block.

Conclusion.

This accident appears to have been caused by the top plate of the near-side leading spring of the engine having broken into three pieces while the train was running. This plate had an old flaw which extended about two-thirds through the fracture that was next the buckle. The right leading spring had been renewed before the engine went to work that morning.

When I took the buckle off the left leading spring, I found that nine other plates out of the 16 of which the spring was composed were broken.

The fractures of these nine plates were principally old, as far as I could judge, but could not be seen until the buckle which covered them was taken off. I advised the manager to take the buckles off the remainder of the springs for the purpose of examining them, and I understand that he has done so, and found that the other springs of this engine were also defective.

The work of overhauling and renewing the defective parts of this engine appears to have been badly done.

The Assistant Secretary,
Railway Department, Board of Trade.

I have, &c.,
F. H. RICH,
Colonel, R.E.

Printed copies of the above report were sent to the Company on the 31st August.

NORTH BRITISH RAILWAY.

Board of Trade, (Railway Department),
1, Whitehall, London, S.W.,
24th September 1889.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 30th ultimo, the result of my inquiry into the causes of a collision which occurred on the 24th ultimo at Musselburgh, on the North British Railway.

In this case the 9.43 a.m. train from Edinburgh (consisting of tank-engine, running bunker first, one third-class brake, one third-class, three first-class, one second-class, one third-class, one third-class brake, one first-class, and one third-class carriages, and three fish-waggons, or 13 vehicles in all), when entering Musselburgh at about 10.7 a.m., came into collision with the buffer-stops, at a speed of about two miles an hour.

The buffer-stops were slightly shifted.

No vehicles left the rails, and the only damages to the rolling-stock were the breaking of a window and the splitting of a buffer-beam.

Thirteen passengers have complained of injury, but it is stated that none were seriously hurt.

The whole of the vehicles in the train were fitted with the Westinghouse brake except the second-class carriage, which had a through pipe, and the three fish-waggons.

The engine was fitted with a steam-brake.

Description.

Musselburgh is the terminal station of a double-line branch, but, as a rule, trains arrive at and depart from the same platform, the proper up platform.

The line, running from the west, curves sharply to the north across the river Esk and into the station.

The following are the distances from the buffer-stops to the places referred to in the evidence :—

	Yards.
To outer end of station roof - -	48
" " platform - -	130
To east end of river bridge - -	180
To west " " - -	239
To signal cabin - - - -	280

The following are the gradients upon the branch, which is 1 m. 26 ch. in length, and falls towards Musselburgh. Level for 183 yards, falling 1 in 100 for 133 yards, falling 1 in 60 for 280 yards, falling 1 in $52\frac{1}{2}$ for 844 yards, falling 1 in 120 for 680 yards, and level for 212 yards.

Evidence.

Peter Brown states: I have been 29 years in the service, and have been station-master at Musselburgh nearly 17 years. On the 24th August I was on duty at about 10.7 a.m., when the collision occurred. I was in the goods office behind the buffer-stops. I heard the 1.43 train from Edinburgh coming in, and thought from the sound that it was coming too far into the station, as trains are ordered to stop when the engine is about a carriage length inside the station roof. I ran out and saw the engine strike the buffers, which it shifted slightly. I think that the engine was running at about two miles an hour at the time. No vehicles left the rails. I saw one passenger with his eyebrow cut. Twelve passengers in all complained of injury from being shaken. The engine-wheels were skidding. I cannot say whether the engine was reversed or not. There was no steam on the engine. The train rebounded, so that I do not think that the Westinghouse brake was on. I did not notice whether the blocks were on upon the carriages. About five minutes afterwards, after I had attended to the passengers, I tried the Westinghouse brake from the van, and it seemed to go on all right. I told the driver this, but he made no reply. I am sure no sand had been applied to the rails. Some time later in the day I spoke to the driver about the occurrence, and he attributed it to the Westinghouse brake handle having stuck.

James McLaren states: I have been about 11 years in the service, and four years a porter at Musselburgh. On the 24th August I was on duty upon the platform at Musselburgh when the 9.43 train arrived. I was standing near the west end of the platform. When the engine passed me I did not notice anything unusual in the speed. Steam was off. I cannot say whether the brakes were on or not. I estimate the speed at two miles an hour. I could certainly have walked faster than it was going. I was standing where the van usually stops. As it did not stop I moved on after the train. I did not hurry, and when the engine struck the stop I was west of the van opposite to one of the three fish-waggons which were behind the van. There was a rebound after the collision. I did not look to see if the blocks were on upon the carriages. I did not pay any attention to what the driver was doing to stop his train. I did not hear any whistle. I did not notice what the guard was doing. I did not look to see if the rails had been sanded. I did not think there would be any collision when the van passed me. I think I had to walk about three carriage lengths after the van. Steam was not applied after the engine entered the station.

William Graham states : I have been over 20 years in the service, and a driver nearly 16 years. On the 24th August I came on duty at 7.20 a.m., having left duty at about 10.40 p.m. on the 23rd August. My ordinary duty is from 7.20 to 10.40, working a shuttle train between Edinburgh and Musselburgh. This is

for Monday, Tuesday, Thursday and Friday. On Wednesdays and Saturdays I leave duty at 3 p.m. I have been working into Musselburgh for about four months. My engine, No. 76, is a tank engine with leading bogie. It is fitted with steam-brake for working blocks upon the engine-wheels, and the Westinghouse brake for the train. The same handle does not apply the two brakes. There is also the usual hand-brake. I was attached to the 9.43 train for Edinburgh. There were 13 vehicles in the train, nine of them being fitted with the Westinghouse brake and the others having through pipes. The usual train between Edinburgh and Musselburgh is only eight vehicles, except for this special run. The 9.43 from Edinburgh is always about this weight. I used my Westinghouse brake when going up to Edinburgh in the morning, and found that it acted slowly and weakly. Coming down I used it, and it was much about the same. I stopped at Abbey Hill, Portobello, and New Hailes ticket platform before getting to Musselburgh. The brake did not act well at these places. I used it coming down the incline to Musselburgh to check the train. I also used the hand-brake on the engine. I approached Musselburgh at my usual speed, with the train well in hand. Steam had been shut off soon after leaving New Hailes ticket platform. I think my speed when passing over the river bridge was about two miles an hour. I had released the Westinghouse brake before entering upon the bridge, and had only the hand-brake on. The usual place for stopping with a train as long as this one is about a carriage length from the buffer-stop. At any rate that is my practice, and I have never been checked for running so far forward. With shorter trains I usually stop with the engine just inside the station roof. I have never received any orders from the station-master as to the point where I was to stop, except about two years ago, when he told me to stop with the van outside the roof if there were any fish-wives' creels in the van. When my engine was about two carriage lengths from the buffer-stops the wheels picked up, and I thought I would not stop in time. I at once applied sand and applied the Westinghouse brake. The brake did not act; I think something had got in to the exhaust. I reversed my engine and applied back steam after applying the brake. I applied my steam-brake, and that acted properly. I struck the stops at a speed of about one mile an hour. On my return journey the brake would not act at New Hailes and Joppa, and I had to reverse my engine. I attribute the fact of the brake not acting properly to the key being out of order. It had been repaired, and had been fitted to the engine that morning. When entering Portobello station on the up journey after the collision I was using the hand-brake only. I gave the key a sudden jerk, and it gave a sudden blow, and the brake went on. It acted much better after that when stopping at Abbey Hill. I have not been on the engine since. It was a long day. The platform sweepings on the rails made my engine-wheels skid.

John Anderson states : I have been over six years in the service and over five years a fireman. I was fireman to driver Graham and can corroborate his evidence. There was a rebound of about the length of the couplings after collision.

William Wisbey states : I have been about 15 years in the service and two years guard. On the 24th August I came on duty at 8 a.m. at Edinburgh. I was guard of the 9.43 a.m. train from Edinburgh to Musselburgh. It was made up as follows:—Tank engine, running bunker first; 1 third-class brake; 1 third-class carriage; 3 first-class carriages; 1 second-class carriage; 1 third-class carriage; 1 third-class brake; 1 first-class carriage; 1 third-class carriage; 3 fish-waggons. I was riding in the rear brake compartment. There were perhaps 50 passengers in the train. There was nothing unusual in the speed of the train when approaching Musselburgh. Coming down the incline the Westinghouse brake was used, but it was taken off just before we got to the signal-box. It had been used for stopping at all the stations, and had acted well enough. My hand-brake was not applied. As a rule this train is stopped with the engine and one carriage inside the station roof, and I thought we were going to stop there this morning. We came very nearly to a stand and then went forward at the same speed without quite stopping.

I did not feel the Westinghouse brake applied after entering the station. It was on down the bank, was released before coming to the signal-box, was applied again on the bridge, and released again just before coming to the platform. I am sure of this. The speed when we struck the buffer-stops was about one mile an hour. The only damage to the train was the breaking of one side glass window and one buffer-beam split. The brake was worked on the up journey and seemed to act well. We did not over-run at any place. There was a rebound after the collision.

John Richardson states : I am a brass finisher in the service of the North British Railway Company, and am employed in St. Margaret's works at Edinburgh. On the 20th August the application key for Westinghouse brake on No. 76 engine was reported for examination. The engine came in on that day and I examined the key. I thought the top spring of the main valve was a little slack—rather too easy. I put a thin washer to strengthen the spring. A spare key was put on to work with while this one was being looked to. The proper key was replaced on the night of the 23rd. I did not put it on myself. That was done by the night shift. On the 25th I examined the key again by the order of the locomotive superintendent. There was nothing wrong with it; and it has been working properly ever since.

Conclusion.

This collision, which was a very slight one, was due first to the driver omitting to get his train under such command when entering the station that he could stop it by the use of the hand-brakes only, and then to the failure of the continuous brake to complete the stop when the wheels of the engine were skidding, either because it was not applied soon enough, or because the handle was out of order. The driver makes the latter cause his excuse, and it is in evidence that the handle had been out of order, had been repaired, and had only been refitted to the engine that same morning. It was examined again after the collision and found to be in good order, and as the evidence of the guard is to the effect that the brake acted properly, both on the journey down and the journey back, I am not inclined to attach much importance to the excuse made by the driver, and believe that he did not resort to the continuous brake soon enough; indeed, he says himself that he did not apply it until he was within two carriage lengths, or say 20 yards, of the buffer-stops; whereas, according to the station-master, the train should have stopped with the engine just inside the station roof, or about 35 yards from the buffer-stops.

The driver had at the time been on duty for under three hours, but it appears from the evidence that his tour of duty upon four days in the week is over 15½ hours, which is far too long.

The engine (No. 76) is so fitted that the steam-brake on the engine and the Westinghouse brake upon the train are applied by two different handles. I understand that many of the North British engines are fitted in this manner, and it would be better if they were altered so that by one action both brakes could be applied.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

F. A. MARINDIN,
Major, R.E.

Printed copies of the above report were sent to the Company on the 10th October.

NORTH BRITISH RAILWAY.

Board of Trade, (Railway Department,)
1, Whitehall, London, S.W.,
11th November 1889.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 16th ultimo, the result of my enquiry into the causes of the collision, which occurred on the 15th ultimo at Wark station, on the Newcastle and Riccarton (single line) branch of the North British Railway.

In this case the 6.15 a.m. passenger train from Newcastle for Riccarton, due at Wark at 7.34 a.m., came into collision (engine with engine) with a portion of the 9.25 p.m. (on the 14th ultimo) goods train from Glasgow for Newcastle, which train was due at Wark at 6.37 a.m. on the 15th ultimo.

There were only seven passengers in the train, and of these five, one of whom had both legs broken, are returned as having been injured.

The passenger train consisted of an eight-wheeled tank-engine, running chimney in front, having four coupled wheels and a four-wheeled leading bogie, four carriages and a brake-van, the Westinghouse automatic brake being fitted to the wheels of all five vehicles, and a steam-brake to the four coupled wheels of the engine, for which there was also the usual hand-brake.

The portion of the goods train consisted of a tender-engine, running engine in front, and four waggons, the engine being fitted with a steam-brake, and the tender with a hand-brake.

The damage to rolling-stock is given in an Appendix.

The collision occurred about 7.34 a.m. on the single line 40 to 60 yards on the Newcastle side of the loop points, or from 815 to 795 yards inside the down distant-signal.

Description.

Wark is a train staff station on the single line between Hexham and Riccarton. It is provided with a loop line about 230 yards long, but it is not arranged for passenger trains to pass each other, as there is no platform on the up loop line. A long siding extends from the down end of the loop for about 200 yards towards Riccarton, where it joins the main line, and there is a dead end at the up end of this siding capable of holding a few waggons.

The points and signals at Wark station are not interlocked, nor is the block system in force. The home-signals are on the same post on the platform 130 yards on the Riccarton side of the points at the up end of the loop, the down distant-signal being 985 yards from the down home-signal. The former can be fairly well seen, but between it and the down home-signal the line is curved and in cutting, so that the view from the engine of a down train of the down home-signal, and of any obstruction on the Hexham side of it, is very limited.

Wark is approached from Hexham on a long rising gradient of 1 in 100, which terminates about 1,615 yards from the home-signal post; the line is then level for 90 yards, falls on a gradient of 1 in 100 for 725 yards, and then continues to fall on a gradient of 1 in 160 for the remaining 800 yards.

The collision occurred on the falling gradient of 1 in 160, about 620 yards from its commencement.

Evidence.

1. *David Hall*, station-master at Wark; 28 years' service, 15 years station-master at Wark.—I came on duty on October 15 at 7.5 a.m., at which time the goods train had not arrived from Riccarton. An engine had arrived from Reedsmouth at 6.56 a.m., with the information that the goods train was late, and that it (the engine) was to take the staff to Wall for the passenger train, Wall being the proper passing place for the goods train and passenger train. The goods train arrived in the long siding at 7.21 a.m., with work to do at Wark. The engine first pushed two waggons which were foul of the crossing between the siding and main line into the dead end at the Reedsmouth end of the platform, and then the engine set back clear of the points. After it had done so, the time being now about 7.30 a.m., I went into the office to get ready some cash bags for the passenger train due at 7.34 a.m. I left no instructions as to what the goods train was then to do, not seeing signal-porter Allsopp, or anyone else connected with the train. When I had got into the office, in about two or three minutes, I saw the engine pass the office window going towards Wall. I went out on to the platform to see which it was going to do, and when I got out the engine had passed beyond the points at the Wall end of the station, and the collision had just occurred, I having heard a loud whistle just before this. The signals at this time were all at danger, or the levers

were in the position of danger; the lamps were still alight. I could not see the back light of the down distant-signal, but I could see that the down home-signal was at danger; there was no one near who could have put these signals up after the collision. The morning was a little misty; it was just daylight when the collision occurred, at 7.34 a.m. If the train staff for Reedsmouth is at the station, it is customary to take off the signals to admit a down passenger train; but if the train staff is not here, the signals are kept at danger, and the trains come in more slowly. It is against the rule to move out on the single line at the Wall end of the station, when a passenger train is within 10 minutes of being due. I fully expected the goods train would not have moved out on to the main line until after the passenger train had passed. Nothing of the kind had ever occurred on previous occasions. Porter Allsopp told me that the goods guard had insisted on leaving the siding, and that he held the points for the engine to do so. I did not speak to either of the drivers or to the guard after the collision. The station clock was going and keeping proper time. I have a speaking telegraph instrument, but I had received no message about the passenger train.

2. *William Allsopp*, night porter at Wark; nine years in the service, night porter nearly all the time.

—I have charge of the signals at Wark. I was on duty on the morning of the 15th October. I saw the goods train arrive and held the points for it to run into the long siding at about 7.21 a.m. The first thing the engine did was to push a waggon foul of the crossing into the dead end, and when I got up to the engine it was standing clear of the points leading on to the main line. I was going away to the platform, when guard Monroe said he wanted to go on to the main line to get hold of three waggons of cattle on the cattle bank siding which had to be attached to his train. I told him he was not to go out, and he said, "Why?" and I replied it was near the time of the passenger train being due. He asked me what time the passenger train was due, and I said, "7.34 a.m." He, however, looked at his watch, and said it was 7.29 a.m., and I again told him not to go out, and he replied that there were five minutes before the passenger train was due, and he insisted on going out. He then uncoupled his train between the 2nd and 3rd waggons, and I held the points to allow the engine to proceed from the siding to the main line, having been overcome by Monroe's argument. The engine and two waggons then went on to the main line, and I got on to the engine when it was in motion and accompanied it past the chock-block, where I dropped off, seeing the passenger train coming. I said to the driver when getting on the engine, "What would you think if you met the passenger train?" He made no reply. Between the chock-block and the points I saw the passenger train coming round the curve, and jumped off, and I believe the driver saw it at the same time, as he gave two sharp whistles. I tumbled down on my knee. The collision then occurred on the Wall side of the points. I could not say whether or not the goods engine had stopped. I think the time on passing the station clock was 7.30 or 7.31. I thought there would have been time to make the shunt before the passenger train was due. The signals were all at danger when the collision occurred. I had taken off no signals to admit the goods train. The signal lamps were alight and burning properly. I am sure the goods engine whistled below the chock-block and the points, the passenger train being then some distance from the points.

3. *William McKinnon*, driver; 32 years' service, 23 years driver.—I started from Sighthill, Glasgow, with the 9.25 p.m. goods train for Newcastle on the 14th October. I was due in Newcastle at 8.25 a.m. on the 15th. I had an extra stop at Greenhill, and more detentions along the road, and I reached Wark at 7.20 a.m., about three-quarters of an hour late. I ought to have passed the passenger train at Wall, but was informed at Reeds mouth that I was to cross it at Wark, and I expected to do so. On approaching Wark we were turned into the long siding, Porter Allsopp holding the points. The distant-signal was at danger when I passed it. On arriving at Wark I found two waggons standing foul of the crossing between the siding and main line, and I pushed these waggons into the dead end clear of the crossing and then set back clear of the crossing-points. We had to lift two cattle waggons at Wark, to do which we had to go out on to the main line and back into the siding where they were standing. Allsopp and Monroe were close to the engine, and Allsopp said there were only three minutes before the passenger train was due, Monroe saying there were five minutes; but the discussion ended in Allsopp holding the points and Monroe telling me to go out, he having previously uncoupled the train between the fourth and fifth waggons. Allsopp jumped on the step of the engine, and on my hesitating a little to pass the home-signal, he hurried me on. Both home-signals were at danger when I passed them. We then went on, and Allsopp jumped off on the left-hand side before the engine reached the points, but not, I think, in consequence of seeing the engine of the passenger train, as he said nothing about it. I was over the points with the engine and four waggons, and had

stopped before I saw the passenger train coming. On seeing it I opened my whistle and tried to get back, but the brake being a little on, I could not get away, and I had not moved before the collision occurred, the speed of the passenger train being pretty sharp. I did not hear any whistle from it. The engines were buffer-locked. We went back about 20 yards on the collision occurring. I remained on the engine, but the fireman jumped. We were neither of us hurt. My engine was a goods tender-engine, running chimney in front, the brake power being derived from a steam-brake on the engine and a hand-brake on the tender. It was the tender-brake being on that prevented my going back at once.

Allsopp recalled denies having said to the driver, "Hurry up."

4. *Adam Drummond*, fireman; nine years' service, 7½ years fireman.—I have been McKinnon's fireman about 15 months. I was with him on the 5th October with the 9.25 p.m. goods train from Sighthill, Glasgow, for Newcastle. I agree with his evidence. We had practically come to a stand when my driver first saw the passenger train. I had nearly got off the tender-brake when I jumped on seeing the passenger train coming.

5. *Hector Monroe*, goods guard; 25 years' service, goods guard all the time.—I was goods guard of the 9.25 p.m. train from Sighthill, Glasgow, for Newcastle, on October 14th. I was due at Wark at 6.37 a.m. We were delayed by an extra stop at Greenhill, 35 minutes at Dunningstown, and lost and gained time at other stations, and finally reached Wark at 7.18 a.m. on the 15th October, 41 minutes late, with a train of 37 waggons and a van. Porter Allsopp held the points to admit us into the long siding at Wark. After arriving, two waggons standing foul of the crossing were pushed up into the dead end to clear the crossing. We then had to lift three cattle waggons which were standing on the siding at the cattle bank, and to move these it was necessary to pull out on to the main line, and back through the points at the Wall end of the station. Some conversation then ensued between Allsopp, McKinnon, and myself, about attaching the cattle waggons, and our watches all agreed, making the time 7.28 a.m., or six minutes before the passenger train was due. Allsopp made no positive objection to our going out, but only said that there would not be time to shunt out the cattle waggons, but that there was time to go into the siding and stand there. I had already uncoupled my train at the fourth waggon from the engine, and the engine and four waggons went out, Allsopp holding the points; at 7.29 a.m. I went up on the left-hand side of the engine, and dropped off opposite the office to go and look at the cattle waggons, and I was about the same place when I saw the collision occur, before which I had heard no whistling. The time was 7.31 by the station clock. There was nothing to have prevented our standing in long siding till after the passenger train had gone.

Allsopp recalled still affirms that Monroe called him back as he was going towards the platform, and that it was then that the time before the passenger train was due was mentioned. He says he never looked at his own watch, but took the time from Monroe.

6. *Forest Maughan*, driver; 16 years' service, 7½ years driver.—I commenced work at 8 p.m. on October 14th to sign off at 8 a.m. on the 15th at Reeds mouth. I had reached Newcastle at 9.48 p.m. on the 14th, after which time I had only to attend to the engine before starting at 6.15 a.m. with the train for Reeds mouth. I left Newcastle at right time with a train consisting of a tank-engine, running chimney in front, and five four-wheeled vehicles—the rear one being a brake-van. The train was fitted with a steam-brake applying to the four coupled wheels of

the engine, which has a four-wheeled leading bogie, and with the Westinghouse brake applying to all the wheels of the vehicles; there was also a hand-brake for the coupled wheels of the engine. The steam-brake and Westinghouse brake were moved by separate handles, one on each side of the engine. We stopped at several stations, where the brake acted well. We are booked to pass the goods train at Wall, but it was not there, and I was not told where I was to pass it, and I was uncertain where I should do so,—as it is sometimes passed at Wark and sometimes at Reeds mouth. We stopped at Barrasford, and left it, by my watch, one minute late, i.e., at 7.28 a.m., the distance thence to Wark being about 3½ miles. My fastest speed was about half way between Barrasford and Wark, viz., about 35 miles an hour. I shut off steam about the usual place, some 300 yards outside the down distant-signal, the speed being then about 25 miles an hour, having come up a bank previously. The distant-signal was at danger when I approached and passed it. On approaching the home-signal I could not see it as it was a foggy morning, but I was prepared to stop at the platform, or outside the points, had I seen any reason for so doing. I was running at a speed of 12 or 15 miles an hour, when, on rounding the inside of the last curve, I caught sight of the goods engine coming towards me, about 50 yards off. I had the Westinghouse brake on slightly before seeing the engine, and on seeing it applied both it and the steam-brake with full pressure, and my speed on striking the other engine was about 8 or 10 miles an hour. The fireman, by my directions, reversed the engine and gave it steam before the collision. I whistled on seeing the distant-signal at danger. I did not whistle again nor did I hear the other engine

whistle. I am nearly sure the goods engine was still coming forward when I met it. The engines were buffer-locked, and went forward about an engine's length after the collision, which occurred at 7.34 or 7.35 a.m. I put on the hand-brake after the other brakes.

7. *George Smith*, fireman; four years' service, 15 months fireman.—I am Maughan's regular fireman, and I was with him when the collision occurred. I agree with his evidence.

8. *Andrew Cockburn*, guard; 10 years' service, four years guard.—I joined the 6.15 a.m. passenger train from Newcastle for Riccarton on October 15. We started to time with a train of five four-wheeled vehicles, including a brake-van at the rear, in which I was riding. We did not stop at all the intermediate stations between Newcastle and Hexham, but at all those between Hexham and Wark. The continuous-brake acted properly at all the stations at which we stopped, the pressure being about 75 lbs. We left Barrasford at right time, viz., 7.27 a.m., and travelled at the usual speed. I saw the Wark distant-signal at danger as I passed it: this meant that we might have to stop anywhere between the distant and home signals. I saw nothing of the goods train before the collision, which took me unawares. I had felt the brakes applied, but not fully, just before the collision, when the speed was about 12 miles an hour. The morning was rather thick. I heard no whistle just before the collision, which occurred about 7.34 a.m. The train contained seven passengers, and the person who had his legs broken was in the second carriage from the engine.

Conclusion.

This collision was primarily caused by the action of Allsopp, the signal porter at Wark station. This man, against his better judgment, but overcome by the persuasion of the guard of the goods train, opened the siding-points leading on to the main line to allow the goods engine with four waggons attached to it to proceed along the single line towards Hexham, within two or three minutes of the time of the passenger train from Hexham being due, in order to attach some cattle waggons which were standing on the loop line. To get back into the loop line it was necessary for the goods engine to proceed at least 40 or 50 yards beyond the loop points, and this on a part of the line where, owing to a curve and cutting, the view from the engine of an approaching down train is very limited, on a gradient falling in the direction in which the down train was running, and on a slightly hazy morning. The goods engine and four waggons accordingly came out of the siding, and the driver says he was just coming to a stand on the single line, 40 or 50 yards on the Hexham side of the loop points, preparatory to setting back into the loop, when he caught sight of the passenger train approaching round the curve. On seeing this he at once stopped, opened his whistle, and tried to get into backward motion, but had not succeeded in doing so, owing to some difficulty in releasing the tender hand-brake, when the collision occurred, his engine being driven back a few yards, and both engines being buffer-locked.

Maughan, the driver of the passenger train, found the Wark down distant-signal at danger as he approached and passed it. He had shut off steam near the top of the falling gradient, and was running (he says) at a speed of 12 or 15 miles an hour, when, on rounding the last curve before reaching Wark station, he caught sight of the goods engine some 50 or 60 yards off. He at once applied both the steam-brake to the engine, and the Westinghouse brake to the vehicles with full pressure, his fireman reversing and putting on steam, but was still running at a speed of 8 or 10 miles an hour, when the engines came into collision; the goods engine, he thinks, being still in forward motion. He states that he had heard no whistle from the goods engine before the collision.

As the Wark distant-signal was at danger when Maughan passed it, as he knew that the block system was not in force, and that he might have to pass the goods train at Wark, and as the morning was hazy, he is certainly to blame for not approaching Wark station more cautiously, so that he might, as enjoined by rule, be able to stop short of any obstruction between the distant and home signals.

Maughan had been on duty for $11\frac{1}{2}$ hours when the collision occurred, and would have finished his day's work at Reedsmouth in another half-hour. He had had no work to do after reaching Newcastle at 9.48 p.m. on the 14th before starting for Reedsmouth at 6.15 a.m. on the 15th, except attending to his engine.

Monroe, the guard of the goods train, is much to blame for persuading signal-porter Allsopp, against his better judgment, to allow the goods engine to shunt out on to the single line, only by his (Monroe's) own showing, five minutes before the passenger train was due. Monroe had been on duty rather more than 10 hours when the collision took place.

Allsopp is an intelligent man of nine years' service. He had come on duty at 6 p.m. on the 14th ultimo for 12 hours, but had, of his own accord, remained till after the passing of the goods train. The duties of the night porter are, I understand, very light, being confined to attending upon three trains, the last of which passes before 11 p.m.

This collision would probably have been prevented had the points and signals at Wark been interlocked, and had the line been worked on the absolute block-system. With a responsible signalman, in a proper signal-cabin, there would be far less likelihood of a goods guard being able to induce him to commit a breach of rules than when both men are together on the ground; and with the block-system in operation a signalman would hardly venture to allow a shunt to be made on a single line in the face of a passenger train, which he knew for a certainty was close at hand.

Both block-system and the interlocking of points and signals will, it is satisfactory to reflect, have now, in compliance with the provisions of the Act of this year, to be shortly introduced on this line, as well as on others where they do not now exist.

The Assistant Secretary,
Railway Department, Board of Trade.

I have, &c.,
C. S. HUTCHINSON,
Major-General, R.E.

APPENDIX.

DAMAGE TO ROLLING STOCK.

North British engine (passenger), No. 77.—Bogie, buffers and buffer-plate, and framing ends damaged.

North British engine (goods), No. 153.—Buffers and buffer-plate and framing ends damaged.

North British first-class carriage, No. 20.—Buffer-rods and casings, end panels, headstock and platforms, damaged.

North British second-class carriage, No. 151.—Buffer-rods and casings, bottom, sides, ends, and headstock damaged.

North British third-class carriage, No. 3.—Buffer-casings and panels damaged.

North British third-class carriage, No. 159.—Buffer-rods and casings, mouldings, headstock, transoms, and diagonals damaged.

Printed copies of the above report were sent to the Company on the 2nd December.

NORTH-EASTERN RAILWAY.

Board of Trade, (Railway Department.)
1, Whitehall, London, S.W.,

11th October, 1889.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 20th August, the result of my enquiry into the causes of the accident which occurred on the 19th August at Ryhope station, on the Stockton and Sunderland line of the North-Eastern Railway.

In this case as the 2 p.m. express passenger train from Liverpool for Newcastle *via* Sunderland, due to leave Leeds at 4.30 p.m., and to pass Ryhope station about 6.48 p.m., having last stopped at Wellfield, 10 miles 8 chains from Ryhope, and having next to stop at Sunderland, 2 miles 73 chains from Ryhope, was running rapidly round a sharp curve which commences close to the Sunderland end of Ryhope station, the whole of the train left the rails; the engine, tender, and third, fourth, fifth, and sixth vehicles out of the seven composing the train, being thrown on their sides, and the two leading vehicles being more or less destroyed.

Complaints of injury have been received from no less than 101 passengers, and in 10 cases the injuries are known to be of a serious character, consisting of fractures of limbs, &c.

The driver, fireman, and front guard of the train also sustained severe injuries.

The train consisted of an eight-wheeled two-cylinder compound engine, with a four-wheeled leading bogie and four coupled wheels, a six-wheeled tender, a brake-van, two third-class carriages, two composites, a third-class carriage, and a brake-van; the engine and tender belonged to the North-Eastern Railway Company, and the seven vehicles to the London and North-Western Railway Company, the whole train being fitted throughout with the Westinghouse automatic brake. The engine and tender crossed the up-line and were thrown on their right sides in the 6-ft. space between the up-line and a siding parallel to it, the front of the engine being 144 yards from the first mark of a wheel being off the rails; the first vehicle (brake-van) got past the engine, being nearly destroyed in doing so, and what remained of it stopped obliquely across the down line, 117 yards beyond the engine, the guard finding himself on the ground between the engine and tender; the second vehicle stopped, with its body destroyed, and its front end mounted on the rear end of the first vehicle; the third, fourth, fifth, and sixth vehicles were thrown on their right sides, foul of both up and down lines, more or less damaged; the seventh vehicle remained upright and in its proper running position, but over the up-line instead of the down-line. The wheels and axles were torn from some of the vehicles.

A detailed list of damage to rolling stock is given in an Appendix.

The permanent-way, both of the up and down lines, was much damaged; 10 rails 200 common chairs, 185 check chairs, and 90 sleepers were broken or damaged, and had to be renewed. Some of the rails were bent in an extraordinary way; the boiler of the engine was pierced by four broken rails, which entered it through the smoke box; and a broken rail forced its way through the floor of one of the compartments of the fifth vehicle, causing some of the most serious injuries.

In consequence of the injuries sustained by the driver, fireman, and guard, I was unable to examine them when I commenced the enquiry on the 22nd August, and they have only recently recovered sufficiently to give their evidence.

Description.

Ryhope station is situated near the foot of gradients falling northwards from Murton station, the second station to the southward from Ryhope. These gradients are as follows:—

1 in 205	-	1 mile 26 chains.	Murton station is at the top of this gradient.
1 in 88.5	-	9 "	
1 in 39	-	14 "	
1 in 44	-	1 " 14 "	{ Seaton station is situated 22 chains from the top of this gradient. Cherry Knowle level crossing occurs six chains from the foot of it.
1 in 48.4	-	24 "	
1 in 60	-	55 "	
1 in 66	-	2 "	{ Ryhope station platforms commence at the top of the gradient of 1 in 66, and extend for 7 chains to a point one chain north of the top of the gradient of 1 in 120.
1 in 71	-	4 "	
1 in 120	-	5 "	
1 in 238	-	75 "	
Total - 4 miles 68 chains.			

The line is straight nearly the whole way from Murton station to the north end of the platform at Ryhope station, *i.e.*, as far as a point one chain north of the top of the gradient of 1 in 120, when a sharp curve to the left (looking northwards) of about $11\frac{1}{2}$ chains radius commences and continues for about 190 yards, when the line again becomes straight.

There is a public road level-crossing at the north end of Ryhope platforms, *i.e.*, at the commencement of the curve. There are the usual guard-rails at the level-crossing, and check-rails extend thence round the curve. When I examined the curve on the morning of the 22nd August I found the super-elevation of the outer rail at the

south end of the curve to be $1\frac{3}{4}$ inches, dying out southward in about 20 yards; northward it gradually increased to $3\frac{3}{4}$ inches at a point 18 yards from the commencement of the curve, and it then gradually decreased to about $2\frac{1}{4}$ inches in the next 15 yards, and then continued between $2\frac{1}{4}$ and $2\frac{1}{2}$ inches round the remainder of the curve. The gauge was a quarter of an inch tight to within seven yards of the south end of the commencement of the curve, it then varied slightly to the commencement of the curve, round which it was about a quarter of an inch slack.

The first mark of a wheel being off the rails was near the inside of the top of the check-rail, about 17 yards north of the south end of the curve; this mark continued visible for about 23 yards, it then ceased for four yards, was again visible for 18 yards, ceased for five yards, continued for eight yards, ceased for four yards, and again continued for 13 yards; at this point, which was 75 yards north of the first mark, a chair under the 6-ft. rail was chipped on the outside, the first visible mark of any wheel being off the rails on the outside of the high rail of the curve; the wheel-mark continued on the check-rail for another 10 yards, two more chairs out of the next seven under the 6-ft. rail being chipped on the outside, and the ninth and tenth chairs being broken; after this wheel-marks began to be visible on the sleepers outside the rail in the 6-ft. space, and the down line to be broken up. Damage to the up line commenced about 17 yards north of the first chipped chair, the engine and tender having apparently deflected to the right about this point, then forced their way through the up line, and shortly after turned over on their right sides in the 6-ft. space between the up line and a siding to the east of it.

The permanent-way is of a substantial character, and consists of steel rails in 30-ft. lengths, which weighed 82 lbs. to the yard when they were laid in 1882; of cast-iron chairs weighing 42 lbs. each (the check-chairs weighing 56 lbs. each); of creosoted Scotch fir sleepers, new in 1884, 9 ft. by 12 in. by 6 in., 11 to the 30-ft. rail, the chairs being secured to them by two twisted spikes in each; the ballast is of coke and ashes, about level with the tops of the sleepers. The permanent way appeared to be in good order, and nothing is said to have given way until after the first wheel marks in the 6-ft. space.

Evidence.

1. *William Barugh*, signalman, seven years' service, acting as signalman nearly the whole time.—I have been employed at Ryhope cabin since July 31st, and I came on duty there on the 19th August at 5 p.m. to remain till 6 a.m.; this occurs once a fortnight, the hours of duty on other days being 12. I was alone in the cabin when the accident occurred. The first intimation I received of the Leeds express was the "Be ready" from Seaton station near the top of the bank at 6.54 p.m. I accepted the signal and received the signal "train on line" at 6.56 p.m., the usual time after the "Be ready." I then forwarded the "Be ready" to Ryhope colliery junction (about half a mile off) had it acknowledged and the needle pegged to "line clear." I then lowered the three down signals, starting, home, and distant, before the train had whistled or reached the distant-signal. I observed the train approaching, the engine passing the cabin at 6.58 p.m. at which time I gave it in to Ryhope colliery junction, but did not give line clear to Seaton, as the train had not run 300 yards into the block section before the accident occurred. Nothing whatever attracted my attention in the running of the train as it passed the cabin, the speed appearing much the same as usual. The steam was off, but I judged by the grinding noise that the brakes were on. The time of running the two miles was exactly two minutes, which is, as a rule, the time the express trains take. I was watching the train after it passed and saw the front of it leave the rails when the tail of the train had got about 100 yards past the cabin. I could not see whether it was the engine or one of the front vehicles which first left the rails. The whole of the train left the rails and the up road and siding adjoining it were both fouled. I had no train signalled on the up line and did not clear either the lines while I remained on duty. I saw no signs of fire in any of the vehicles as the train passed. The weather was fair at the time of the accident. I did not notice whether it had been raining since I had been on duty. I have no idea what caused the

accident. I have heard no suspicions of any obstruction having been placed between the check rail and running-rail. No vehicles had passed over the level crossing for half an hour before the express.

2. *Robert Lumley*, station-master at Ryhope, $17\frac{1}{2}$ years' service, $2\frac{1}{2}$ years station master at Ryhope.—I was in my office on the up platform when the Leeds express passed on the 19th of August, I heard it pass and noticed nothing unusual in the noise it made. I did not hear any noise caused by the accident, but I was attracted by shouting immediately after the train had passed, and I at once went to the spot. I could not speak positively as to the position of the engine and vehicles which had composed the train; everything was off the rails. I made no inspection to ascertain what had caused the accident, nor have I heard any reasonable cause suggested. It had been raining for about a quarter of an hour before and at the time of the accident.

3. *William Henry*, guard, $12\frac{1}{2}$ years' service, $3\frac{1}{2}$ years guard.—I joined the Liverpool express at Leeds on the 19th August. It was due to leave at 4.30 p.m. and it left at 4.33 p.m., 3 minutes late. I was in charge of the train which consisted of brake-van No. 1733, 3rd class 1253, 3rd class 1003, composite 306, composite 986, 3rd class 1278, brake-van 1757, and saloon No. 8. I was in the rear van. The saloon was taken off at Harrogate, after which no alteration took place in the train before the accident occurred. The train was fitted throughout with the Westinghouse brake, which I could apply from the van. The last stop before the accident was at Wellfield, which we left at 6.42 p.m., 16 minutes late, having lost 2 minutes at Leeds junction signals, 2 at Holbeck signals, 3 at Horsforth signals, 2 at Stockton (by luggage), and 4 at Wingate junction signals; after leaving Wellfield I had noticed the air pressure to be 75 lbs. Nothing occurred to attract

my attention in the running or the train after leaving Wellfield to the time of the accident. I did not notice the speed on the bank approaching Ryhope as I was checking parcels at the time. I felt the brake applied at Seaton Bank head, where I put my hand-brake on and kept it on without altering it till the accident occurred. I cannot say what the driver may have done with his brake after passing the bank head, as my own brake being on would prevent my noticing this. I cannot say when steam was shut off. The accident took me completely unawares just as I had gone to the brake handle to release it after passing round the curve at the Sunderland end of Ryhope station. The first thing I knew or felt was when my van left the road and ran into the 6 ft. space. I was thrown against the left side of the van and knocked down on the floor, where I remained till the van stopped. I was slightly hurt, but have not had to leave my duty. There were from 150 to 200 passengers in the train. Two or three of the carriages were on their sides. We left Wellfield at 6.42 and I booked 7 p.m. as the time of my leaving the train directly after the accident. Slight rain was falling at the time of the accident. I have no idea what caused the accident. There was no violent oscillation in the van as it was running down the bank. I had a word with the driver after the accident, but nothing passed either with him or any one else at the time as to the cause of the accident. There was a good deal of luggage in my van.

4. *Henry Moore*, inspector of permanent-way between Sunderland and Haswell and on other branches.—I have held this position 5 years out of 22 years' service. I heard of the accident at Sunderland at 7.35 p.m. and reached Ryhope soon after 8 with a break-down gang. On reaching Ryhope I found the position of the engine and vehicles such as shown upon the diagram. At dawn next morning before anything had been over the rails of the down line, I noticed the marks on the inner edge of the check rail and on the chairs of the six-ft. rail, as I have pointed them out to-day, but I saw no mark of any wheels having crossed the six-ft. rail. Immediately after the first chipped chair, deep marks of wheels occurred in the 6-ft. space. The first disturbance of the down line took place about 20 yards north of the first chipped chair, and from this both up and down lines were more or less broken up. 200 common chairs, 185 check chairs, 10 30-ft. rails, 50 sleepers on the main line, and 40 in the siding have had to be renewed. The down line had new steel 30-ft. rails, weighing 82 lbs. to the yard in 1882, the sleepers measure 9 ft. by 12 ins. by 6 ins., are of creosoted Scotch fir, and were renewed in 1884; there are 11 to the 30-ft. rail at 2 ft. central intervals at the points; the chairs were new in 1884, and weigh 42 lbs. each, the check chairs weigh 56 lbs. each, and the common chairs and check chairs are fixed with 2 twisted spikes in each; the ballast is of coke and cinders. There was no distortion of the curve nor any spikes drawn before the road began to be broken up. I could not say what caused the accident. The down line at the place had been lifted and regulated two months ago, and it had not required any attention since then.

5. *William Clifford*, platelayer, eight years' service.—My length extends from Ryhope Colliery Junction for two miles towards Seaton. My father is the length man, but he has been ill since Sunday, August 18th, and I have been doing some of his work. The last work done near the spot where the accident occurred was in June, when the curve was regulated, surfaced, and beaten up; since that time nothing has been done. I had walked up the down line about 3.30 p.m. on the 19th, and there was nothing to notice in the state of it; it appeared all right, and I had no keys to knock in round the curve. I saw the road again after the accident at about 7.30 p.m. I had not noticed any marks of where the

accident commenced till this morning, when I saw the mark on the check rail.

6. *John Wanless*, driver, 31 years' service, 18 years driver.—I have been accustomed to act as driver of both passenger and goods trains—but chiefly goods trains—between Stockton and Sunderland for the past four or five years, and since June last, I have been driver of the express trains between Leeds and Newcastle, and had acted as such some six times between June and the day of the accident on the down journey, and 11 times on the up journey. I commenced work on the 19th August at 8.40 a.m., and was driver of the express leaving Newcastle for Leeds via Sunderland, at 10.10 a.m.; I reached Leeds at 12.50 p.m. and started back for Newcastle at 4.30 p.m. During these hours in Leeds I did not leave the station, but was engaged about the engine, and in having my dinner in the shed near the Canal bridge. We left Leeds a few minutes late, my engine being No. 663, an eight-wheeled engine with a four-wheeled leading bogie and four coupled wheels, and a six-wheeled tender, running engine first; the engine was a two-cylinder compound engine, the working pressure being 175 lbs. The train consisted of eight vehicles, with the Westinghouse brake fitted throughout to the coupled wheels of the engine, all the wheels of the tender and to the remainder of the train. I do not remember a saloon at the back of the train being detached at Harrogate. William Pringle was my mate, and had been with me since June, and there was no one else on the engine but him. I had had charge of engine No. 663 since June, and had worked it regularly since that date. I lost my note book in the accident and cannot be sure that the times given by guard Henry of detention at signals, &c. are correct, but I hardly thought that we were so much as 16 minutes late on leaving Wellfield. On the various stops I had occasion to make after starting, I used the Westinghouse brake on all occasions (eight stops), and it acted well. The pressure as a rule was from 70 to 75 lbs. Nothing unusual had taken place as far as Wellfield, which is a regular stopping place for this train. The next stop would have been at Sunderland. We had a clear run from Wellfield to Seaton Bank head, and I shut off steam at the bank head for running down the bank to Ryhope, my speed being then 40 miles an hour or perhaps rather more; from this point I allowed the train to run freely down as far as a level crossing about half-way down the bank, where the speed was higher than at the top; I here let off about 5 lbs. of air, which did not seem to have the usual effect on the speed, the rails being greasy. I then let off 5 or 6 lbs. more air, and still finding it not effective, I opened the sand-valves, which should supply sand in front of both driving-wheels; but still no proper effect was produced, and I supposed the pipes must have been clogged at the bottom. I then continued moving the sand-valves with my hand, trying to make the sand run, and let off another 5 lbs. or so of air, but still without much effect as the wheels continued to skid as they had already begun to do after the other applications, when we were approaching Ryhope platform. The speed had been diminished from the distant-signal to the Stockton end of the platform, and along the platform it was still further reduced, owing, I think, to sand on the rails from some previous engine, and on entering the curve I do not think the speed exceeded 30 miles an hour. Soon after entering the curve the engine made a lurch and ran off the rails to the right and fell over on its right side, the engine and tender having become detached from the train. I did not reverse the engine as I was of opinion it would have been of no use, as the wheels were sliding. The fireman applied the hand-brake about where I applied air the second time. My intention had been to reduce speed round the Ryhope curve to about 10 or 15 miles an hour, as was my custom. I am not aware of any order for reduction of speed round this curve or in

the descent of the bank. There are two other places, viz., at Haswell and Murton, where speed has to be reduced, owing to sharp curves, but there is no mention of these in the rules that I am aware of. I was on the engine when it turned over, and was hurt in the forehead and back, and scalded. I had not mistaken my position when I applied my brake at the level crossing, nor do I think the speed was higher than usual at that place. I had used sand on Leeds Bank, when it had run properly. It was dry sand.

William Pringle, fireman, 14 years' service, 13½ years fireman. I have been with Wanless since June, and was with him on the 19th August. I agree generally with the driver's evidence. The speed at Seaton Bank head was about 50 miles an hour. I put my hand brake on and kept it rubbing. I think the driver opened the sand-valves before applying the air brake a second time. The speed had increased up to the level crossing where the brake was applied, and it diminished very little from it to Ryhope, but decreased along the platform and was about 30 miles an hour on entering the curve, it being the practice to pass through the curve at a speed of 10 or 15 miles an hour. The engine left the rail just after entering the curve and appeared to jump on the rail, and I went over with it on the engine foot plate. I was severely scalded in the legs, and am now nearly all right. I cannot say what could have caused the accident. I have been round the curve at the same speed before. The driver had not whistled before the accident. We had not felt uneasy at the speed before the accident took place.

John Thorrat, guard, 11 years' service, acting assistant passenger guard during the whole time. I accompanied the 10.10 a.m. train from Newcastle to Leeds on the 19th August, and returned with it from Leeds at 4.30 p.m. in the brake van next the engine. There was a dog in the van with me from Leeds, but no one else. I did not book the time. We were detained by signal at several places and were about 16 minutes late leaving Wellfield. The Westinghouse brake had acted well at all the stops. Nothing unusual occurred after leaving Wellfield before the accident; steam was shut off about the Bank head when the speed was 40 or 45 miles an hour. I put on my hand brake on passing Seaton station, when the speed had increased. About the level crossing the driver applied the Westinghouse brake, which did not much diminish the speed, and I did not notice his applying it again. The speed appeared to get less on passing Ryhope station and was not more than 25 or 35 miles an hour. On entering the curve I did not feel uneasy at the speed, but I took off my hand-brake, not liking to keep it on round a curve. I then saw the engine rise and run off the rails to the right just after passing the station. I was at once thrown down and do not know when the van broke away from the tender. I was then rendered senseless and on coming to myself found I was on the ground between the engine and tender. I was much hurt on the back and side and have not yet returned to duty. On recovering my senses I went to the signal cabin to ascertain that both roads were blocked, and finding they were returned to the engine. I have no notion how I got away from the van.

Conclusion.

There appears to be no other reasonable cause to assign for this very serious accident to the express train from Leeds for Newcastle than that it was running at too high a rate of speed when it entered the sharp curve of about $11\frac{1}{2}$ chains radius which occurs at the foot of the steep falling gradients extending for about $2\frac{1}{2}$ miles to the southward of Ryhope station.

The mark of a wheel along the inside of the top of the check rail round the low rail of the curve, was first visible 17 yards from the commencement of the curve, and continued with slight intervals for about 85 yards, the mark of a wheel outside the high rail of the curve being 75 yards from the first mark on the check rail, or 10 yards before the mark on the top of the check rail ceased. It is difficult to say whether the mark on the top of the check rail was or was not that of an engine wheel; but the first mark outside the high rail was no doubt that of one of the engine wheels (probably the right driving wheel) as almost immediately after this the down line began to be broken up.

The super-elevation of the high rail of the curve was intended to be about two inches, adapted to a speed of about 20 miles an hour, and this was its amount, or very nearly so, where the first wheel mark outside the high rail was visible. This amount was exceeded between the north end of the curve and a place 18 yards from it, where the mark on the check rail commenced, and where it had gradually increased to $3\frac{3}{4}$ inches, diminishing to $2\frac{1}{4}$ inches in the next 13 yards. This irregularity must have been due to want of care on the part of the ganger, but the excess of cant would have contributed rather to prevent than cause the accident.

The driver of the train, Wanless, an experienced man of 18 years' service in that capacity, acknowledges that his speed at the Bank head, where he shut off steam, was 40 miles an hour, or perhaps rather more; and that he allowed his train to run freely (so far as the Westinghouse brake was concerned) down the bank (gradients of 1 in 39 and 1 in 44) to a level-crossing rather more than half-way down it, when his speed had increased, notwithstanding the application of the van-brakes by the rear guard at the Bank head, and by the front guard on passing Seaton station 36 chains from the Bank head. Wanless says that he then applied the Westinghouse brake (using about 5 lbs. of air) at the level crossing, but that it did not seem to have the usual effect as the rails were greasy; that he applied the brake in the same way a second time, but still without much affecting the speed; that he then opened the sand valves and supposes the sand would not run owing to the pipes being clogged at the

bottom from rain which was falling at the time; that after this he again applied the brake, but still without it producing proper effect on the speed as the wheels began to skid instead of to revolve slowly as he wished them to do; that between Ryhope distant-signal and the commencement of the curve, where the gradients are less steep than higher up the bank, the speed slackened considerably and did not, he thinks, exceed 30 miles an hour on entering the curve, soon after which his engine made a lurch, bounded off the rails to the right, and then fell over on its right side. Wanless states that he intended to pass round the curve at a speed of from 10 to 15 miles an hour according to his usual custom.

Wanless's fireman estimates the speed at the Bank head at 50 miles an hour, and on entering the curve at 30 miles an hour. He says that he applied the hand-brake at the Bank head and not as Wanless states below the level crossing.

The front guard thinks the speed was from 40 to 45 miles an hour at the Bank head, and from 25 to 35 miles an hour on entering the curve. He states that he applied his hand-brake on passing Seaton station, about half a mile down the bank.

The rear guard had noticed nothing unusual in the speed after leaving Wellfield station where the train had last stopped. He states that he applied his hand-brake at the Bank head.

The signalman in Ryhope station cabin, just opposite the place where a wheel first mounted the check rail, noticed nothing unusual in the speed of the train as it passed his cabin.

The train is timed to leave Wellfield at 6.26 p.m. and to reach Sunderland at 6.54 p.m., the distance being 13 miles, giving an average speed of 28 miles an hour. On the present occasion it took 15 minutes to run from Wellfield to Ryhope, a distance of 10 miles 8 chains, giving an average speed of rather more than 40 miles an hour, so that had there been no accident and this average speed had been maintained, Sunderland would have been reached in 19½ minutes, instead of 28 minutes, the time allowed for the journey. Again the time of passing Murton junction, 3 miles 72 chains from Ryhope, was 6.54 p.m., giving an average speed of 58 miles an hour between it and Ryhope; of passing Seaton Bank head, 2 miles 41 chains from Ryhope, was 6.55 p.m., giving an average speed of about 50 miles an hour between it and Ryhope; and of passing Seaton station, 2 miles 2 chains from Ryhope 6.56 p.m., giving an average speed of about 60 miles an hour between it and Ryhope. These averages may of course be not strictly accurate as slight errors may have occurred in the reading of the clocks, and the clocks themselves may have slightly differed, but the broad fact nevertheless remains that in a journey of 10 miles over a line where dangerous gradients and sharp curves abound the distance had been run in 15 minutes, instead of 21½ minutes as allowed, and an average speed of rather more than 40 miles an hour instead of the average booked speed of 28 miles an hour had been maintained.

It was most injudicious of the driver to allow his train to enter upon a falling gradient of 1 in 39 succeeded by another of 1 in 44, at a speed according to his own acknowledgment of 40 miles an hour and perhaps more, and then to take no means to check this speed for more than a mile, in running which distance it must have been considerably increased; and it is no wonder that owing to the slippery condition of the rails from the rain, and to the sand in the bottom of the sand-pipes getting wet, and therefore not running, he was unable at such a high rate of speed and on so severe a gradient, to reduce the speed to a safe amount before entering the curve, when I have little doubt that, judging from the results of the accident, the speed must have been at least 40 miles an hour, a speed greatly in excess of that suited to so sharp a curve.

I should attribute more blame to driver Wanless for running down the steep gradients commencing at Seaton Bank head at so high a rate of speed as he himself acknowledges to have done, had there been any instructions issued to drivers with regard to speed upon this bank and round the sharp curve at the bottom of it. A speed of 25 miles an hour down the bank for passenger trains with continuous brakes, and of 15 miles an hour round the curve cannot in my opinion be safely exceeded, and it was I think a grave omission when the running of express trains was commenced on the line between Stockton and Sunderland not to have issued instructions to the drivers of these trains to warn them not to exceed very moderate rates of speed in descending the Seaton Bank, and in running round the sharp curve at the foot of it.

Wanless had been on duty about 10½ hours when the accident occurred, and would have completed his day's work (which consisted of a trip from Newcastle to Leeds and back) in about another half-hour.

Now that express trains are being run between Leeds and Sunderland it is most desirable that the sharp curve on which this accident took place (as well as others at Haswell and Murton) should be improved.

The Assistant Secretary,
Railway Department, Board of Trade.

I have, &c.,
(Signed) C. S. HUTCHINSON,
Major General, R.E.

APPENDIX.

ACCIDENT at RYHOPE, August 19th, 1889.

PARTICULARS OF DAMAGE to ENGINE and TENDER.

Bogie passenger engine, No. 663.—Front and intermediate buffer-beam, both cylinders, starting and intercepting valves, blast and steam pipes, clack-box and feed-pipe, reversing shaft and bracket, valve-gear, Westinghouse donkey-pump exhaust pipe, foot-plate, splasher, front and side of cab, handrail, reversing-rod, and whistle-stand broken; smoke-box door and front crushed in; two holes punched through smoke-box tube-plate; and connecting rod, coupling-rod, foot-steps, and crank-pins bent.

Tender, No. 663.—One spring and coupling and safety-chains broken; footplate, handrail, top-rail, brake-hanger, and brake-stays bent; and large hole made in right-hand side of tank.

PARTICULARS OF DAMAGE to LONDON and NORTH-WESTERN COMPANY'S CARRIAGE STOCK.

Brake-van, No. 1,733.—Body, frame, and two pairs of wheels and axles destroyed.

Third-class, No. 1,253.—Body destroyed, frame twisted, and brake-gear damaged.

Third-class No. 1,003.—Side and end panels, and door handles broken, bottom frame twisted, and brake-gear damaged.

Lavatory composite, No. 306.—Side and end panels, two corner pillars, sheaves, window lights, seven door handles, three axle-boxes, two buffer-cylinders, one buffer-rod, three footboards, ironwork, brake-gear, and side moulding broken; one buffer-rod bent, and inside fittings damaged.

Lavatory composite, No. 986.—Side, end, and door panels, window lights, one corner pillar, one buffer cylinder, two buffer-rods, brake-gear and ironwork broken; one buffer-rod, four door handles, and four door hinges bent; and cornice and inside fittings damaged.

Third class, No. 1,278.—Side, end, and door panels, door and quarter lights, two corner pillars, end framing, two axle-boxes, footboards, ironwork, and brake-gear broken; two buffer-rods bent, and inside fittings damaged.

Brake-van, No. 1,757.—One end sheath, four end panels, end framing, centre bars, side-chains, footboards, and ironwork broken.

Printed copies of the above report were sent to the Company on the 7th November.

NORTH-EASTERN RAILWAY.

Board of Trade, (Railway Department,)
1, Whitehall, London, S.W.,
28th September 1889.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 10th instant, the result of my inquiry into the causes of a collision which occurred on the 7th instant, at York station, on the North-Eastern Railway.

In this case, the 12.10 p.m. Lancashire and Yorkshire train from Manchester, due to arrive at York at 2.10 p.m., came into collision with the buffer-stops at the end of No. 6 Dock at about 2.26 p.m.

No vehicles left the rails, except the bogie of the engine, which mounted the platform, but the buffer-stops were broken down and the platform behind was damaged.

Thirteen passengers are stated to have complained of injuries, none of which were serious.

The damages to the rolling stock were as follows:—

Engine No. 893—

Cast-iron bogie centre broken.

Two sand-boxes damaged.

Right-hand trailing platform ripped up.

In the passenger carriages—

Two buffer rods bent, and the bodies of nine carriages shifted.

The train was made up as follows: Engine and tender, brake-van, one composite, two third-class, one third-class brake, two composites, one third-class brake, two third-class and one composite carriages and brake-van, all six-wheeled stock, and all fitted with the automatic vacuum brake, with which the engine and tender also were fitted.

Description.

There are four lines through York station with dock lines on each side.

No. 6 line, a dock line, upon which this collision occurred, is at the back of the proper down platform, on the west side of the platform.

The signals at the south end of the station are worked from the locomotive signal cabin, which is on the west side of the railway, and are placed on a signal bridge over the railway.

There are also leading signals upon a four-armed bracket post controlled from the station central cabin. The left-hand arm is for No. 6 Dock, the next for No. 5, or the proper down line, the next for the through down line, and the last for crossing to the up platform line, to which many of the down trains run.

There are similar signals upon the signal bridge, and distant signals near Holgate cabin, the next block cabin southwards.

The line curves to the left running northwards, and is on a falling gradient of 1 in 1,320.

The following distances from the buffer-stops should be noted :—

To south end of platform	-	-	138 yards.
„ points leading to No. 6 Dock	-	-	204 „
„ leading signals -	-	-	223 „
„ locomotive cabin -	-	-	319 „
„ signal-bridge carrying home-signals	-	-	406 „
„ Holgate cabin -	-	-	629 „

The line is worked upon the block system.

Evidence.

George Atkins states : I have been about 18 years in the service of the North-Eastern Railway Company, and about 17 years a signalman, about 12 years at York. On the 7th September I came on duty at 1 p.m. for eight hours in the locomotive cabin, in which there are 94 levers. The Lancashire and Yorkshire express, due to arrive at 2.10, was given "On line" to me from Holgate Bridge cabin at about 2.23, and I took off No. 88 signal for it to run to No. 6 platform. This is the platform it always runs to during the summer season. The train passed at 2.25, running no faster than usual, about 10 or 12 miles an hour I should think. I did not notice whether steam was on or off, or whether the brakes were applied. I had no idea there would be any collision, and did not hear of it until 20 minutes afterwards. I work block outwards but not inwards, but I have telephone communication with the station cabin, the signalman in which directs me to which platforms to send the trains.

William Stafford states : I have been 17 years in the service of the North-Eastern Railway Company, and 12 years assistant station-master at York. On the 7th September I was on duty on the west or proper down platform when the collision occurred. I was nearly opposite to the buffer-stop on No. 6 Dock. I saw the train as it passed the home-signals, and at that time there was nothing to call my attention to it particularly. Steam was then off, as far as I could tell. It was not until the train was within a yard of the stops that I looked at it again, as I was attending to the Midland train upon No. 5 line. There was no shouting or anything, but I just turned round. The driver then had his brakes on. The engine struck the stops at considerable speed—a great deal faster than I could walk. I would estimate the speed at 12 miles an hour. The buffer-stop was knocked away, and the bogie wheels of the engine mounted the platform. The luggage table behind the buffers was knocked away. None of the carriages left the rails and none were telescoped. There was no rebound. There were a good many passengers. As far as I could ascertain about 13 or 14 passengers were injured, but none seriously that I could see. It was a clear day, but there had been a local shower just before the train arrived. I spoke to the driver

immediately afterwards. I asked him how it was that he had not stopped, and he said that the brake would not hold. I did not try the brake myself. The couplings were slightly slack as the train stood after the collision.

William Taylor states : I have been nearly 17 years in the service of the Lancashire and Yorkshire Railway Company, and about seven years a driver. On the 6th September I went off duty at 9.25 p.m., after 15½ hours duty. On the 7th September I came on duty at about 10.55 at Newton Heath. My engine, No. 983, is a bogie engine, with leading bogie and driving and trailing wheels coupled, and a six-wheeled tender. It is fitted with the automatic vacuum brake which works blocks on the four coupled wheels of the engine and the six tender wheels. The brake was in good order. I was attached to the 12.10 train from Manchester, due at York at 2.10. There were six vehicles on the train when we left Manchester, and 12 when we left Rochdale. It was about the same weight as usual. We stopped at Sowerby Bridge, Brighouse, Wakefield, and Castleford, in the ordinary course. I used my continuous brake at all these places, and it acted properly. I also found it act properly at one or two places when checked by signals. Approaching York the signals at North Lane cabin were on when I sighted them, and I checked my train with the continuous brake until the signals were dropped for me; the south point signals were also on when I sighted them, and I again checked the train slightly until the signals were dropped. The Holgate home-signal was dropped as I passed the distant-signal, and the locomotive cabin home-signal was off when I sighted it. I was running at about 10 miles an hour when I passed this home-signal. I had shut off steam when sighting the North Lane signals, and did not put it on again. When I passed the locomotive cabin home-signal I was just working the brake, and I had my train properly under command. I was running with 22 inches of vacuum. Both gauges were showing a good vacuum. I thought I was running too slow when passing the locomotive cabin, and I put the blower on and released the brake. When my engine was at the end of the platform I applied the brake again, destroying about 10 inches. I think my speed

at the end of the platform was about four or five miles an hour. I did not release the brakes after that. About two carriage lengths inside the end of the platform I put the brake on full power, and did not release it again. When about 30 yards from the buffer-stop I found that the train was not pulling up. I reversed the engine and applied steam. My fireman sanded the rails. I struck the buffer-stop at a speed of about three miles an hour. I and my fireman both stopped on the engine. Neither of us were hurt. After the collision I did not look to see if the brake-blocks were on the wheels. This is only the second time I have run into York station, but my fireman knew the road well. There was a shower of rain as we were running from Holgate Bridge into the station, and I cannot attribute the accident to any other cause. The rails inside the station were also greasy. I was not making up any time.

George Dixon Gill states : I have been about seven years in the service of the Lancashire and Yorkshire Railway Company, and about 2½ years as fireman. I was fireman to William Taylor on the 7th September. I have heard my driver's evidence read over, and I agree with it. I had applied the tender brake at Holgate Bridge, and kept it on all the way. I have been running to York about eight months, and I know the road perfectly well. I was not knocked about when the engine struck the buffer.

Charles Biglow states : I have been 16 years in the service, and 14 years a guard. On the 7th September I came on duty at 6.30 a.m. I was guard of the Liverpool portion of the train (due at York at 2.10), which joined the Manchester portion at Rochdale. On leaving Rochdale the train was made up as follows : Engine and tender, large brake-van, one composite, two third-class, one third-class brake, two composites, one third-class brake, two third-class, one composite, and large brake-van. It was all six-wheeled stock, and was fitted throughout with the automatic brake, in good order. We left Rochdale a little late, about two minutes, but lost time on the road at stations. There was nothing unusual in the speed when approaching York. I think we passed the ticket platform at a speed of between 8 or 10 miles an hour. The vacuum-brake gauge in my van shows the pressure on the pipe only. The pressure averaged 18 to 20 ins. throughout the journey. When passing the ticket platform there was very little pressure, and I could feel that the train was being checked by the brake. Soon after this the driver blew off the brake.

I felt the brake go on again just as my van (the front van) was entering the station. There were 3 ins. or 4 ins. of pressure left on the pipe. Finding that the train was not pulling up properly, I exhausted the vacuum when we were coming under the station roof, and also put the hand-brake hard on. We struck the buffers at a speed of about five miles an hour. I was not knocked over, as I held on to the brake wheel. It was a fairly loaded train. Only three passengers complained to me of injury. I did not speak to the driver after the accident. I have been working regularly into York about four or five years ago.

Robert Brockbark states : I have been about 20 years in the service, and have been travelling inspector for six years. I was in the front van with guard Biglow. His evidence is correct. I have been in the habit of coming into York with these trains. I did not observe that the speed was any greater than usual. I think the speed on striking the stops was from five to seven miles an hour. There was a heavy shower just outside the station. I think the wheels were picked up owing to the rain, and skidded into the station. It is the habit to use the continuous brake as well as the hand-brake when entering York. There was no rebound. I looked at the front portion of the train after the collision, and the blocks were on the wheels. I have no doubt whatever that the brake was in good order.

Basil Hope states : I am assistant district locomotive superintendent in the service of the North-Eastern Railway Company. I was a passenger in a train from Darlington which ran through York station to put back into a bay line on the east side of the station, just as the Lancashire and Yorkshire train was running in. My train was nearly at a stand between the locomotive cabin and the station as the Lancashire and Yorkshire train passed. It was running then at a speed of at least 10 miles an hour, but it did not strike me that there would be any danger of an accident. When we had backed into the station I saw the Lancashire and Yorkshire engine on the platform, and I went down to look at it. I found there were 18 inches of vacuum in the vacuum chamber, and the vacuum in the pipe was all exhausted. I looked along the top of the rails to see if there were any marks of skidding, and the top of the rail was abraded for about 30 yards. Sand had been applied. The speed of the train was not higher than that usually adopted by the Lancashire and Yorkshire trains.

Conclusion.

The evidence given above proves that the speed of the train, although no higher than usual, was as much as 10 miles an hour when between the locomotive cabin and the station, when within 250 yards of the buffer-stops, and that in spite of the application of the continuous brake when about 130 yards from the stops the train was still running at over five miles an hour when the engine struck the stops.

The driver seems to have had his train under control before reaching the locomotive cabin, for he released the continuous brakes with which he had been checking the speed, but he appears to have been too late in applying it again, although possibly if the wheels had not skidded he might have stopped short of the stops.

There had just been a very sharp shower, and this probably caused the wheels to skid.

The collision may be attributed to a miscalculation of the speed by the driver, but I think that, as usual, he was depending too much upon his continuous brake for stopping when upon the dock line, and that if, when between the locomotive cabin and the station, he had been running at the speed enjoined by the regulations, viz., at such a speed that the train might be stopped by the use of the hand-brakes only, the collision would not have occurred.

These buffer-stop collisions are a great deal too common, and I do not believe that they will cease to take place until drivers are forbidden to use their continuous brakes

to stop with at terminal stations except in cases of emergency, when they find that the hand-brakes are not sufficient.

At the time of the collision the driver had been on duty for about $3\frac{1}{2}$ hours only, but the evidence discloses the fact that upon the previous day he had been on duty for $15\frac{1}{2}$ hours.

In the last accident upon the Lancashire and Yorkshire Railway which I investigated, I had to call attention to the excessive hours of duty of a driver, who had been on for over 15 hours; and as such long hours are neither fair to the men nor safe for the travelling public, it is high time that they were put a stop to.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

F. A. MARINDIN,
Major, R.E.

Printed copies of the above report were sent to the Lancashire and Yorkshire and North-Eastern Railway Companies on the 10th October.

SOUTH-EASTERN RAILWAY.

Board of Trade, (Railway Department),
1, Whitehall, London, S.W.,

17th October 1889.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 12th ultimo, the result of my enquiry into the circumstances connected with the accident which occurred on the 30th of August between Battle and Robertsbridge stations on the Tunbridge and Hastings branch of the South-Eastern Railway.

In this case, as the 4.40 p.m. up slow passenger train from Hastings for London was running between Battle and Robertsbridge stations, five vehicles at the rear of the train—which consisted of engine, tender, and seven vehicles—left the rails near an over-bridge about $2\frac{1}{2}$ miles on the London side of Battle station, the first of these five vehicles coming into collision with one of the piers of the bridge.

One passenger has complained of being injured.

In the train—which consisted of engine and tender, two third-class carriages, a composite, a first-class carriage, a second-class carriage (these carriages all having six wheels), a four-wheeled brake-van, and a four-wheeled horse-box, the whole of the train being fitted with the automatic vacuum brake, the horse-box having only brake pipes and couplings but no wheel blocks—the front end of the front compartment of the third vehicle was damaged by coming in contact with the pier of the over-bridge, and the left foot-board was broken off in front. The couplings between the second and third vehicles were broken, and there was an interval of about 110 yards between these two vehicles, the engine, tender, and the first two vehicles having run ahead some distance after the severance took place and before they stopped. The third, fourth, fifth, and sixth vehicles remained coupled together with their right wheels in the 4-ft. space, and their left wheels outside the left rail of the up line; but the seventh vehicle (the horse-box) was separated from the sixth vehicle by an interval of about three yards, and was completely outside the rails, its right wheels being outside the left end of the sleepers, and its left wheels on the other side of a drain along the side of the line.

Four uprights in the horse-box were cracked, and a coupling was broken.

In the permanent-way six rails were bent, 125 chairs were broken, 20 sleepers were cracked or damaged, and several fish-plates were broken.

Description.

This accident commenced by a wheel leaving the rails about 16 yards beyond the north end of a curve to the left (looking towards London) of one mile radius and about 800 yards long, the line thence being straight for about 600 yards; the gradient of the up line at and near the place is a rising one of 1 in 415. The first wheel mark was on the head of a spike on the inside of a chair supporting the right rail, the chair itself being broken: the second mark was about 6 feet further on, on the ballast, and about 8 inches outside the left rail, the chair under the right rail opposite this mark being broken; there were then marks on the sleepers both in the 4-ft. space and outside

the left rail of a pair of wheels for a distance of 18 yards from the second mark; marks of three wheels then became visible in the 4-ft. space and continued for three yards, when marks of four wheels commenced to be seen, the marks after this becoming numerous; 50 yards from the first mark a left rail was bent inwards into the 4-ft. space, and between this rail and the over-bridge, at which the rear portion of the train stopped, a distance of about 113 yards, five other left rails were bent, all inwards into the 4-ft. space, the up line having been more or less broken up for this distance.

The up line at and near the scene of the accident was under repair at the time of its occurrence. New sleepers had been put in between a spot about two rails' length on the Battle side of the first mark and the over-bridge where the train stopped, the work having been completed, so far as the new sleepers were concerned, two days before the accident, but the ballast had been only lightly thrown back to the level of the tops of the new sleepers. On the Battle side of the new sleepers the ballast had been stripped for a considerable distance as far as the tops of the sleepers, preparatory to new ones being put in where necessary. Notice had been given by circular, dated 23rd August, that the up line between Battle and Robertsbridge was under repair, and a green flag was placed upon the line nearly half a mile from the spot to inform drivers of the actual position of the work in hand.

The permanent-way of the up line consists of double-headed steel rails, in 21 feet lengths, laid in 1883 and turned in 1887, which weighed originally 83 lbs. to the yard, fished at the points; they are secured by outside keys to cast-iron chairs weighing 23 lbs. each, these again being fastened to rectangular creosoted fir sleepers 9 ft. by 10 in. by 5 in., eight to each rail length, by two spikes passing through hollow trenails in each chair. The condition of the ballast is stated above. The gauge of the up line was slightly easy round the 80-chain curve and correct on the straight portion when I examined it; the super-elevation of the outer rail of the curve being about 2 inches, this dying out where the first wheel mark was visible, 16 yards from the termination of the curve; and this is stated to have been the condition of things when the accident occurred.

Evidence.

1. *William Weatherburn*, driver; 42 years' service, driver 34 years.—I have been accustomed to drive between London and Hastings for about 20 years. On August 30th I was driver of the 4.40 p.m. up stopping train from Hastings for London. My engine was No. 79, a six-wheeled engine, four wheels coupled, with inside cylinders 16 in. by 24 in., and a six-wheeled tender, and the train consisted of seven vehicles, including a horse-box at the tail of the train. The train was fitted with the automatic vacuum brake applying to the coupled vehicles of the engine, all the tender wheels, and to all the vehicles of the train except (I believe) the horse-box. We left Hastings at right time, and Battle, the last stop before the accident; about three minutes late, having next to stop at Robertsbridge. After leaving Battle we attained a speed of about 35 miles an hour till we came to within about three-quarters of a mile of the scene of the accident, and there finding a green flag on the line, in consequence of repairs going on to the permanent-way, I reduced speed to about 25 miles, and was running at that speed when nearing over-bridge No. 107. About 20 yards on the London side of this bridge I felt a severe snatch, which was the first indication I had of anything being wrong, and I had felt nothing before this. I at once shut off steam and applied the brake with full force, looked back and saw the third vehicle from the engine stopped at the bridge and off the road. My engine stopped, as near as I can judge, 150 yards from the bridge with only two vehicles on the road and attached to the engine. I had not felt any automatic application of the brake before I put it on myself. I went back to see what had happened, but did not get back so far as the carriages which were off the road, as I was engaged in getting the passengers out of the two first carriages, and I went away with them. I found the screw coupling at the rear of the second vehicle was gone, the draw-bar hook not bent, the brake couplings were pulled asunder, but not injured. I felt no uneasy motion in the road where the first mark was visible of a vehicle

having left the rails; no men were working at the spot; the ballast was level with the tops of the sleepers. I had not happened to look back at any part of the journey so as to notice whether or not the horse-box was oscillating. I cannot speak positively as to the time of the accident, but think it was seven or eight minutes after leaving Battle. I had received a notice of the road being under repair.

2. *Frederick Prall*, fireman; eight years' service, spare fireman for two years, promoted to fireman since the accident.—I have been with Weatherburn for three or four months. I agree with his evidence, which has been read over to me; I applied my hand-brake when the driver applied the vacuum brake. I was standing on the left side of the engine, and on feeling the snatch I looked round and saw the third vehicle in contact with the bridge. I felt no drag on the train prior to the snatch; on feeling the snatch I said "Wo!" to my mate.

3. *Albert Blundy*, guard; 19 years' service, 17 years guard.—I am in the habit of travelling between London and Hastings, and on the 3rd August I was guard of the 4.40 p.m. up stopping train from Hastings for London. The train consisted of two six-wheeled third-class coaches, a six-wheeled composite, a six-wheeled first-class, a six-wheeled second-class, then a four-wheeled brake-van, and lastly an empty horse-box. The train was fitted with the automatic vacuum brake, except the horse-box, which was fitted only with vacuum pipes. There were between 30 or 40 passengers in the train; three or four of these were in the second-class compartment at the leading end of the third vehicle. We left Hastings at right time, St. Leonards one minute late, West St. Leonards two minutes late, and Battle four minutes late, two minutes being lost by signals. After leaving Battle we got up a speed of 30 miles to 35 miles an hour, but I did not notice the behaviour of the horse-box when we were running. Speed was reduced at a green flag some distance from the scene

of the accident, as I knew by the brake being applied. Soon after this I was thrown down in the van by a severe lunge, having felt nothing previously. I picked myself up and was thrown down again, and on getting up I was pitched against the off-side door, and just then the van stopped. I was slightly hurt in the hand by a box falling on it. I jumped out immediately and found the third vehicle detached from the second, with its near-front end against the Hastings side of the pier of the over-bridge; the vehicle was nearly parallel with the line; the fourth vehicle was connected with the third vehicle by one side chain, and askew to the rails; the fifth vehicle was coupled to the fourth vehicle, but detached from the van, the couplings having given way; also askew to the rails. My van was also askew to the rails—the front wheels in the 4-ft. space. The horse-box was separated by a short distance from the van, and altogether outside the rails. The vehicles were all on their wheels. I looked at my watch on jumping out of the van and saw it was 5.8, four minutes after leaving Battle. I went back some distance, but not as far as the first mark; there were no permanent-way men about at the place. I could form no idea as to which vehicle was the first to leave the rails. I did not notice the brake go on just at the time of the accident. Only one gentleman complained of being hurt; he was in a first-class compartment of the third vehicle. The third vehicle had been connected to the second with the screw coupling of the third, and the shackle of this was gone. I am not certain about the side chains.

4. *William Simpson*, inspector of permanent-way from Tunbridge to West St. Leonards.—I have held this position for seven years. I had visited the scene of the accident on the 28th August. New sleepers had been put in between bridge No. 107 and a point about seven yards on the Battle side of the first mark, and the road had been stripped with the view of putting in more sleepers on the Battle side of this, the ballast being everywhere level with the tops of the sleepers. The men had left this work on Wednesday, and were engaged with the ballast train on Thursday and Friday, but a green flag was kept 700 yards from where the road had been stripped. I reached the scene of the accident about 6.30 p.m., at which time none of the vehicles had been moved. I cannot speak as to the exact position of the first vehicle which was off the rails. The only gap between the five vehicles was between the horse-box and van, and this was about three yards. I examined the road and found the first mark where I pointed it out to-day, viz., on the head of a spike on the inside of a 6-ft. chair, about 16 yards from the end of the curve, and then the other marks as pointed out. As

the result of the accident six rails were bent, 125 chairs broken, and about 20 new sleepers had to be replaced. Several fish-plates were broken, but no rails. The rails are of steel, 83 lbs. to the yard, in 21-foot lengths. They were new six or seven years since, and were turned two years ago. The sleepers are 9 feet, 10 in. by 5 in., of creosoted fir, eight to the rail's length. The chairs are cast iron, 23 lbs. each, fastened with two spikes in hollow trenails. The ballast was everywhere level with the tops of the sleepers. I cannot at all account for the accident, but I think the horse-box must have been the first vehicle to leave the rails. I found the speed of the previous passenger train to have been six miles in seven minutes between Battle and Robertsbridge, as I took from the Battle signal-book, and after this a goods train had passed the spot; a gentleman at Robertsbridge who had been a passenger in the 4.40 p.m. train said that the speed of the train had been 40 miles an hour. I could find no mark previously to that on the spike-head. The gauge at this point and 40 or 50 yards on the Battle side was one-eighth to a quarter of an inch slack.

5. *Robert Barton*, sub-inspector of permanent-way, 6½ years in that position, between Tunbridge and West St. Leonards.—I had been on the engine of the ballast train over the spot on the afternoon of the 30th August, running pretty fast, and I had felt nothing wrong with the road. It was lightly filled in with ballast up to the level of the tops of the sleepers. New sleepers had been put in for about three rail lengths from the first mark, and on the Battle side of it. I looked particularly for the first mark of a wheel being off the rails, and could find nothing on the Battle side of the spike-head. My impression is that the horse-box was the first vehicle to leave the rails.

6. *Frederic Joiner*, foreman of carriage department at Tunbridge.—I reached the scene of the accident about 7 o'clock, before any vehicles had been moved. I found the first vehicle off the rails, under the bridge and close to the pier; the second vehicle was close up to the bridge, and the other three were together, with a gap of about three yards between the horse-box and van. The horse-box was entirely outside the rails. Four screw couplings were broken, two side chains, and other hooks opened; the brake coupling had given way except in front of the third vehicle; the horse-box brake coupling had not been connected. I could see no mark of anything being off the rails on the Battle side of the mark on the spike-head. The horse-box appeared all right as regards springs, horn-plates, and axle-boxes, but four pillars were broken.

Conclusion.

A careful consideration of the evidence and circumstances connected with this accident leads me to the opinion that the empty horse-box at the tail of a train consisting of an engine, tender, and seven vehicles, was the first to leave the rails, and that it dragged off after it the four vehicles in front of it. This horse-box had four wheels with a wheel base of 7 ft., and weighed, empty, about 4½ tons. It had been last in the shops for general repairs in August 1889, and when I examined it after the accident all the running parts were in very good order, and none of the spring-plates were broken or damaged notwithstanding the rough running of the vehicle over ballast, &c. for a distance of at least 100 yards. The horse-box was fitted with brake pipes, but not with brake blocks, though for some reason the brake connection between the horse-box and the remainder of the train does not appear to have been made.

Notwithstanding the warning given by the green flag, and the notice in the circular of the 23rd August, the train was probably running over an imperfectly ballasted portion of the line at a high rate of speed (the driver and fireman state it to have been 25 miles an hour), having just completed the descent of falling gradients principally of 1 in 100 extending from Battle, and on leaving the left-handed curve of a mile radius, in running round which any tendency to oscillation would be checked by outward pressure.

the horse-box more likely began to oscillate and one pair of its wheels came off the rails 16 yards from the termination of the curve, and on what would have been the *inside* of the curve had it extended thus far, the first visible mark being on a spike-head on the *inside* of the right rail, and the next mark, about 6 feet further on, being on the ballast about 8 inches outside the left rail, after which the marks soon became frequent, but still all in the 4-ft. space and outside the left rail; it is very possible that in addition to oscillation there may have been some imperfection (other than the deficiency of ballast) in the condition of the permanent-way to have contributed to cause the accident.

If the horse-box was not the first vehicle to leave the rails it would have been probably either the third or fourth vehicle which did so, but as these were large heavy six-wheeled coaches in good running condition, it is much more likely that the last vehicle in the train, a light horse-box with a short wheel base of only 7 feet, should have been the one to jump off, rather than a heavy vehicle towards the centre of the train.

The driver of the train, an experienced man of 34 years service as such, states that he had attained a speed of about 35 miles till within about three-quarters of a mile of the scene of the accident, when in consequence of repairs to the permanent-way he reduced the speed to about 25 miles an hour, and was running at that speed when about 20 yards on the London side of the over-bridge, with which the rear of the train came in contact, he felt a severe snatch on the engine, upon which he at once shut off steam, applied the continuous brake, the automatic action of which he had not felt before his own application of it, and stopped with his engine about 150 yards beyond the bridge, with two vehicles only on the rails and remaining attached to the engine, the other five having been left behind at the bridge. If the automatic continuous brake was in good working order, as is stated to have been the case, its automatic action must have been brought into play when the train became severed between the second and third vehicles, this severance having most probably taken place when the third vehicle (then off the rails) came in contact with the pier of the over-bridge about 160 yards from where the engine stopped, or about 120 yards after the severance had taken place. Now, on a rising gradient of 1 in 415, the engine, tender, and two vehicles would have been brought to rest in 120 yards at a speed considerably in excess of the 25 miles an hour deposed to by the driver.

The accident must, I think, therefore be attributed to running a light vehicle with a short wheel base at the tail of a train proceeding at too high a rate of speed along a part of the line under repair. It is no doubt convenient to attach horse-boxes to the tail of passenger trains, but it would be far safer to place light vehicles of this description in front of the rear brake-van rather than behind it.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

C. S. HUTCHINSON,
Major-General, R.E.

Printed copies of the above report were sent to the Company on the 6th November.

SOUTH-EASTERN RAILWAY.

Board of Trade, (Railway Department),
1, Whitehall, London, S.W.,

31st October, 1889.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 10th instant, the result of my inquiry into the causes of the slight collision which occurred on the 30th ultimo at Tunbridge station, on the South-Eastern Railway.

In this case the Dover portion of the 10.30 a.m. down passenger train from Charing Cross, due to leave Tunbridge at 11.52 a.m., consisting of engine, tender, and nine vehicles, including two vans at the tail of the train, while standing alongside the Tunbridge down platform, was run into at the rear by an unattached engine which had just before placed three vehicles on the rear of the train.

Complaints of injury have been received from five passengers.

The rolling stock received no damage, nor were any wheels knocked off the rails.

The collision occurred about seven minutes after mid-day.

Evidence.

1. *Ernest E. Thomas*, station-master; 19½ years' service, station-master at Tunbridge for two years.—I was on the down platform when the collision occurred on the 30th September. The 10.30 a.m. train from Charing Cross arrived at 11.58 a.m., 17 minutes late, it having been shunted at Sevenoaks to allow the 11 a.m. Brussels express to pass. It consisted of two portions, the front one for Hastings, and the rear one for Dover. The engine which had brought the train from London was detached to become the engine of the Dover portion. The Hastings portion started at 12.2 with nine vehicles. When the train arrived the rear of the down portion, which then consisted of eight vehicles, was standing just over the trailing-points, 17 yards on the London side of the end of the platform. It then became necessary to take off the two vans at the end of the train in order to place a London and South-Western carriage, which had arrived by the train from Redhill due at 11.15, and which had been placed at the back of the down platform, and was going to Dover, in front of the seventh vehicle, which was a Dover van. The engine of the Redhill train pulled back the two vans, attached them to the London and South-Western coach, and then put them up against the sixth vehicle of the Dover train, increasing it to nine vehicles. The engine which was to take the train to Dover was attached at this time to the front of the train, and I signalled the driver to move ahead in order to get the two rear vans alongside of the platform. The train then drew ahead till the last van was about 35 yards on the Dover side of the end of the platform, when the driver stopped by signal from me. Almost immediately that the train had stopped the rear van was run into by the engine of the train from Redhill. I saw this engine coming forward when it was about an engine's length from the tail of the train, and I whistled sharply with my whistle to attract attention on the engine. I saw the fireman at once go to the brake with his left hand and hold his right hand out to the driver. The brake was on before the engine struck the train at a speed of about five miles an hour. I was standing near the tail of the train, which was not moved forward so far as I saw. I had no conversation with the driver as to why he had made the mistake he did. There was no time to move the train ahead after I saw the engine coming. The collision occurred about 12.7 p.m. The morning was clear. The engine of the Redhill train was running chimney in front. The Dover train was fitted with the automatic brake, which I believe was on when the collision occurred. Two soldiers in the South-Western carriage complained of injury, and two females in the front of the train complained of being shaken. The train was able to proceed on its journey at 12.10 p.m., three minutes after the collision. I could not say whether steam was on the engine when I saw it just before the collision. I had heard no whistle.

2. *Walter Trowell*, shunter; 10 years' service, two years shunter at Tunbridge.—I was on duty on the morning of the 30th September. On the arrival of the train from Redhill, due at 11.15 a.m., a London and South-Western carriage containing troops was placed in Walker's siding to be attached to the Dover train. Upon the arrival of the 10.30 a.m. train the tail of the train stood about a van's length on the London side of the platform trailing-points. After the Hastings portion of the train had started I directed the engine of the Redhill train to pull out the two rear vans, attach them to the South-Western carriage, and to put the three vehicles back upon the tail of the train. This was done without delay, and the three vehicles were coupled on to the tail of the train. The brake-pipes were not connected between the South-Western carriage and the vehicles on each side of it, as they had only the simple vacuum-brake arrangements, but the remainder of

the train had the automatic vacuum-brake attached to the engine. The train was then moved ahead by direction of the station-master, in order to bring the van alongside of the platform to load the luggage, and the last van stopped about 35 yards from the end of the platform. I walked along to the platform after the train, and I was standing opposite the Dover van when the collision took place. I had given no instruction to the engine of the Redhill train to come forward, and hearing some one whistle I looked round and saw the engine strike the train. I could not say whether the train was moved forward by the blow, but there was a gap of two to three yards between the engine and the last van. I knew the Redhill engine was going to the turntable, and I had motioned the signalman to send it through the west crossing along one of the up lines, and I had remarked to the fireman before the train had moved away that this would be the quickest way for them to go. I am not aware that anyone had signalled to the driver to move ahead along the down platform line. I heard no whistle before the engine started. I think the fireman made some remark, in reply to what I had said, to the effect that they would follow the train, and in consequence I did not repeat my hand-signal to the signalman. The collision occurred almost immediately upon the train drawing ahead.

3. *John Pryers*, carriage examiner; 29 years' service, 26 years carriage examiner at Tunbridge.—I was standing in the 6-ft. space, near the water crane on the up line, nearly opposite to where the collision took place. I saw the Dover portion of the train draw ahead to the platform after the three vehicles had been put on behind it by the engine of the Redhill train. Immediately after the train stopped I saw the engine in motion along the down platform line, about at the end of the platform, the speed being six or seven miles an hour. Thinking it would strike the train I shouted twice, "Wo!" as loud as I could. After shouting I could see that the brake was being applied, by the speed slackening, and the speed on collision was about five miles an hour. I could not say whether steam was on the engine when I first saw it in motion. I had heard no whistle. I had not seen the driver before the collision, but on its occurring he put his head over the side of the weather-board. I had no conversation with him. I heard a whistle and shouts from the platform, about the same time I shouted.

4. *Samuel Smith*, driver; 41 years' service, 25 years driver on the South-Eastern Railway.—I commenced work at 7.30 a.m. on the 30th September to sign off about 5 p.m. I had first taken a train from Tunbridge to Tunbridge Wells, then one from Tunbridge Wells to Redhill, and then back to Tunbridge, where I arrived at about 11.17 a.m., two minutes late. My engine was No. 25, a six-wheeled tender engine, with the driving and trailing wheels coupled, inside cylinders; the tender having six wheels. The engine was fitted both with the simple and automatic vacuum-brake, applying to the coupled wheels of the engine and the tender wheels. While shunting at Tunbridge I was using the simple vacuum-brake. When the 10.30 a.m. train arrived from London I was standing in the siding under the signal-box, ready to assist in shunting vehicles on or off that train. I was then told to take one or two vans off the tail of the train, and to pick up a carriage I had brought in from Redhill, which was standing in Walker's siding. I made the necessary shunts, and backed the two or three vehicles on to the tail of the Dover train, which was a little beyond the end of the platform. My engine was then uncoupled from the last van, and the train drew ahead-down along the platform. After the train had gone ahead about two carriage lengths I followed it along the platform line, and thinking the

train was proceeding on its journey and not going to stop at the platform I did not keep as good a look-out as I might have done, but on seeing the train had stopped about a carriage length before I reached it I put on the vacuum-brake, reversed the engine and gave it steam, and struck the train at a speed of about three miles an hour, the speed not having been more than four miles an hour at any time after starting. Steam was not on when I caught sight of the train, as I had only given the engine a puff to start it. I was going down to the turntable, which is on the up side of the line. I had looked back, and seeing no signal to go back through the west crossing I had intended to go forward to the east end of the station. I had not been expecting the train would stop, as it often did not do so. My engine was running chimney in front, and I was on the 6-ft. side.

5. *Charles Wenham*, fireman; 14 years' service, 8 years fireman.—I have been Smith's mate for two

months, and I was with him on 30th September. I agree generally with his evidence, but I think the train had gone ahead about four carriage lengths when he started, thinking it was going clean away. On seeing the station-master hold out his arms I shouted to the driver, who shut off steam, put on the brake, and reversed his engine. I could not say whether he put on steam after reversing. I had time to get my brake full on before the collision, when the speed was about four miles an hour, and had not been much more than this. I heard some shouting after seeing the station-master's arms held out. We were going to the turntable, and it was the general practice to follow the train rather than cross and go along the up line. Neither the driver nor I jumped off, nor were we hurt. I heard shunter Trowell say we should go through the west cross-over road, but the driver said we should be as well following down the train. I heard a shrill whistle. My driver opened his whistle before he started.

Conclusion.

Owing to the length of the 10.30 a.m. passenger train, which consisted of a Hastings and Dover portion when it arrived at Tunbridge, the rear (or Dover portion) of it extended beyond the end of the down platform. While it was standing in this position Smith, the driver of an unattached engine, was directed to take hold of the two rear vans, attach them to a loaded carriage of troops, which had recently arrived from Redhill and was standing in an adjacent siding, and then put the three vehicles on to the rear of the Dover portion of the train. This operation Smith properly performed, and his engine, which was running chimney in front, was then detached from the rear vehicle (a brake-van) of the Dover portion of the down train. Smith's next operation would be to go to the engine turntable, which is at the Dover end of the station, and to do so he could either proceed along the down platform line after the departure of the Dover train, or get permission from the signalman in the junction cabin to cross on to the up line and proceed to the turntable along it.

As soon as Smith had placed the vehicles on the rear of the Dover portion of the train, the station-master directed the driver, who had joined the front of the train with his engine on the departure of the Hastings portion, to draw ahead along the platform in order to bring the rear vans alongside of it and load some luggage. The train was accordingly moved forwards about 86 yards, and had but just stopped when the rear van was run into, at a speed of perhaps about five miles an hour, by Smith's engine; the shock of the collision was more felt in the London and South-Western carriage containing troops than would otherwise have been the case, as the five front vehicles were fitted with the automatic vacuum-brake, which the driver had used for stopping after drawing down along the platform, whereas the vehicle next in front of the troop carriage and the van behind it were provided only with plain vacuum fittings, and therefore the brake connections could not be efficiently made further back than the fifth vehicle.

Smith having decided to go to the turntable by following the Dover train along the down platform line, started almost immediately after it had drawn ahead, and concluding it had gone straight away (although it was stated to be a most ordinary thing for a train to draw down along the platform as had been done in the present case) never looked ahead, and was quite unaware that the train had stopped close in front of him until alarmed by whistles and shouts from the station-master and others, upon hearing which he applied the vacuum-brake which was fitted to the engine and tender wheels and reversed the engine, the fireman putting on the tender-brake, but these measures being taken too late to avert the collision.

This slight collision is entirely attributable to the negligence of driver Smith and fireman Wenham in charge of engine No. 25. These men kept no look-out in front of them when following closely behind the Dover portion of the 10.30 a.m. train (to which they had just attached three vehicles) as it was drawing forwards along the platform to bring the rear vans opposite some luggage which had to be loaded into them. These men were evidently under the false impression (for which they had no justification, as they well knew that it was a common practice for trains to draw ahead before starting away for the purpose of loading luggage) that the train was going right away on its journey, whereas it stopped after going forward about 85 yards.

Smith is an experienced driver of 25 years' service as such on the South-Eastern Railway; Wenham has been 14 years in the service and eight years a fireman. Both men had come on duty at 7.30 a.m. to sign off at about 5.0 p.m.

The Assistant Secretary,
Railway Department, Board of Trade.

I have, &c.,
C. S. HUTCHINSON,
Major-General, R.E.

Printed copies of the above report were sent to the Company on the 18th November.

SOUTH-EASTERN RAILWAY.

Board of Trade, (Railway Department,)
7th November 1889.

SIR,

IN compliance with the instructions contained in your Minute of the 18th ultimo, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances which attended the collision, that occurred on the 15th ultimo, between Stony Street junction and Cannon Street station, on the South-Eastern Railway.

A South-Eastern train from Addiscombe Road ran into a South-Eastern train from Enfield, which was standing outside the Cannon Street station home-signal. Three passengers in the Addiscombe Road train are reported to have been shaken.

The train from Enfield, which had come off the Great Northern Railway, consisted of a tank-engine and eight coaches. It was waiting outside Cannon Street, as the station-signal was at danger, when it was run into by the train from Addiscombe Road, which consisted of a tank-engine and 16 coaches.

The latter train at the time of the collision is reported to have been running at a speed of about four miles an hour. There were screw-brakes on the engine and in the compartments in which the guards were travelling, and the whole train was fitted with the simple vacuum-brake, which could be applied by the engine-driver.

The buffer casing of the engine of the train from Addiscombe Road was broken, and one buffer casting of the last coach and two or three on the other coaches of the train from Enfield were broken.

Description.

Stony Street junction is the place where the railway from Greenwich joins the railway from Charing Cross. The latter railway has a branch line, viâ Farringdon Street, to the Great Northern Railway, and the South-Eastern trains run to and from Enfield over this branch line.

The junction points and signals are worked from a raised cabin which is placed at the south side of the lines, close to the junction.

There are two up lines from Greenwich, the one next to the junction cabin is called the west and the other, which is next to it, is called the east up line. The line from Farringdon Street joins the up west line from Greenwich at the north side of Stony Street junction cabin. The lines are worked on the absolute block system.

The up signals are well placed near the junction cabin, and are good signals.

The collision occurred about 80 yards on the Cannon Street side of the Stony Street junction up home-signals.

Evidence.

Wm. Lewis, signalman on duty on the 15th Oct. at Stony Street cabin, stated: About 7.45 a.m. I took off the No. 1 distant-signal for the South-Eastern Company's train from the Great Northern Railway. It had come viâ Farringdon Street. It passed my cabin at 7.46, and pulled up after passing my cabin, I suppose, because the Cannon Street signals were not lowered for it to proceed into the station. About 7.49 a.m. I took off the home and distant signals for a train from Greenwich, which runs along the east road or centre up line. This train arrived about a minute after I lowered the signal, and it was also stopped after passing my cabin. The Mid-Kent train, which was running on the west road, arrived at my cabin about the same time as the Greenwich train, the

latter being slightly ahead. The Mid-Kent train ran past my cabin although the home and distant signals for the west road were at danger. The train was running at a speed of about eight miles an hour. I ran out, called, and held up my arms to try and stop the driver of the Mid-Kent train. The engine of this train had just passed my cabin. The fireman appeared to see me; he looked at me and then looked up at the signal, but the Mid-Kent train ran into the South-Eastern train from Farringdon Street when it was about 70 yards beyond my cabin. I heard the noise but did not know there was a collision. I thought the brakes had been put on. I have been 41 years in the Company's service, and over 30 years a signalman. I work absolute block to the stations at each side of my cabin.

John Barker stated: I was driver of the Mid-Kent train from Addiscombe Road, which was due to leave there at 7.8 a.m., on the 15th October. It left at the proper time, and arrived at Stony Street at the proper time. My train consisted of a tank-engine, running funnel in front, and 16 carriages, the first and last had brake compartments with a guard in each. The engine was fitted with a screw and the simple vacuum brake, which acted on all the coaches, and the guards had screw-brakes in their compartments. The Stony Street distant-signal was at "Danger" when I ran past it at a speed of about eight miles an hour. I passed the home-signal at about the same speed. I had seen a signal drop as I approached, and I thought it was the signal for my train, but it turned out to have been the signal for the east road, which is next to the west road, on which I was running. I did not become aware of my mistake until I was about two carriage lengths from the train that was standing on the road on which I was running. My fireman called my attention at the same time. I at once applied the vacuum-brake and reversed my engine, but I could not stop my train before my engine struck the train in front at a speed of about four miles an hour. I found afterwards, that the train that my engine struck was one that had come off the Great Northern Railway. I and my fireman remained on the engine till after the collision and were not hurt. One buffer case was broken, but no part of either train left the rails. I have been 37 years in the Company's service, and about 28 years a driver. I am in the habit of running into Cannon Street and Charing Cross stations. I had come on duty at 5.10 a.m. I went off at 3.45 p.m. the day previous. I could not see the train I ran into any sooner, as the train from Greenwich was standing on the east line, and, owing to the curve of the railway, it hid the train I ran into from my view.

Frederick Whelan, guard in charge of the 7.8 a.m. train from Addiscombe Road on the 15th October,

stated: I was riding in the brake compartment of the first coach. My train travelled all right as far as Stony Street junction. The train was rather late leaving London Bridge. I saw that Stony Street distant-signal was at danger, but I did not see the home-signal, owing to the steam from my engine and from the engine of the Greenwich train, which was on the east road. My train passed Stony Street junction at a speed of between six and seven miles an hour, and struck the South-Eastern train, that came from the Great Northern Railway, at a speed of about two miles an hour. I heard the signalman at Stony Street junction calling out, and I put my screw-brake on, but the vacuum had already acted. I was not hurt by the collision. I have been about eight years in the Company's service, and four years a guard. I walked down my train after the collision and only one passenger complained to me; he said his back was hurt.

John Bryant, guard in charge of the 6.54 a.m. train from Enfield on the 15th October, stated: My train left at the proper time, and it was keeping proper time when it was stopped outside the Cannon Street signal, which was at danger. My train consisted of a tank-engine, four composite and four third-class coaches. There was a brake compartment with a guard in the front coach, and I was in the brake compartment of the last coach. My train had been standing for about five minutes when it was run into by a Mid-Kent train from Addiscombe Road. I was in my compartment at the time. I was knocked into the corner but not hurt. The buffer-casting on my coach and some others on the off side of my train were broken, but nothing left the rails. I have been 18 years in the Company's service, 14 years a guard. I saw the Mid-Kent train a moment before the collision, but I had not time to get out. There were no passengers in my train at the time, they had all left at different stations on the road. My screw-brake was not on when the collision occurred.

Conclusion.

This collision was caused by the engine-driver of the train from Addiscombe Road, which left London Bridge station one minute late, mistaking the junction-signal for the east road, which was lowered for a train from Greenwich, for his signal.

He was running on the west road, and the signal for this road was at danger when he passed it. These signals are close to each other, distinct, and at their proper sides.

The curve in the railway and the train from Greenwich, which was just in front of the train from Addiscombe Road, prevented the driver seeing the train from Enfield until he was within about two carriage lengths of it.

The collision occurred about 7.49 a.m. The driver had come on duty at 5.10 a.m. This man has been in the Company's service a long time. He bears an excellent character, and is well acquainted with these railways. He put on his continuous brake as soon as he caught sight of the train that his engine run into.

The Assistant Secretary,
Railway Department, Board of Trade.

I am, &c.,
F. H. RICH,
Colonel, R.E.

Printed copies of the above report were sent to the Company on the 20th November.

SOUTH-EASTERN RAILWAY.

Board of Trade, (Railway Department,)
1, Whitehall, London, S.W.,
25th January 1890.

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 31st ultimo, the result of my enquiry into the circumstances connected with the collision which occurred on the 17th ultimo, near London Bridge station, on the South-Eastern Railway.

In this case the rear of the 5.50 p.m. up passenger train from Sevenoaks, due at London Bridge at 6.46 p.m., while running between AB and CD signal cabins on its way to No. 2 high level platform, came into collision with a pilot engine intended to proceed towards the London Bridge low-level station, but which had been by mistake turned through a slip-crossing, and was thus enabled to foul the line on which the passenger train was running.

Five passengers have complained of injury.

In the passenger train, which consisted of a tender-engine running chimney in front, and eight vehicles, including a brake-carriage next the engine, and a brake-van (with a guard) in rear, the whole being fitted with the plain vacuum-brake, the last three vehicles were thrown off the rails, and after running off the rails for a short distance again took the rails at a crossing; the last four vehicles were slightly damaged.

The pilot engine, which was running tender in front and was fitted with the plain vacuum-brake, was slightly damaged.

Description.

The entrance to London Bridge on the east or down side is controlled by two signal cabins, AB and CD, 230 yards apart. They are both on the north side of the lines, CD cabin being about 300 yards from the east end of the up platforms, and AB cabin 230 yards east of CD. These cabins are in communication by means of telephone, and some of the points worked from one cabin are controlled from the other, and it was in connection with some of the points so controlled, and in consequence of a misunderstanding between the signalmen and the shunter in charge of the pilot engine, that the collision occurred, half way between the cabins.

Evidence.

1. *George Fist*, shunter; 10 years' service, all the time at London Bridge station.—I came on duty at 9 a.m., on the 17th December, for 12 hours. A goods train from Tunbridge via the old line arrived on No. 2 low-level line, at 6.50 p.m. It consisted of five waggons and two brake-vans, all empties. The length of the train caused the last two vehicles to stand on the down side of No. 29 points. Pilot engine No. 267 had then to proceed from low-level line No. 1, in order to get to the tail of the goods train, and help to break it up. It became my duty to accompany the pilot engine, and I did so. By the CD signalman's permission, the engine then came out on to the up North Kent line, and passed through the slip (No. 25), and along the crossing, till we got opposite AB cabin, where the signalman gave us a red light, and we stopped before getting to No. 22 points. The signalman called out, "I cannot get my points over; you will have to go back." Before we started to go back, he again called out "Right back on the goods." I said in reply, "You know we cannot go back on the goods, as well as I do. Is CD right for us to go back?" He said, "Wait a minute," and went back into the cabin. After he had said, "You will have to go back on the goods," I got off the engine and went nearer to the cabin. I had then returned to the engine, when he gave us a white light, and shouted "Right back where you came from," from which I concluded he had communicated with CD cabin. We then at once started back, tender in front, and on approaching the slip-points it was too dark for me to see how they stood, and the engine had reached about the centre of the slip, when I found we were running towards No. 2 North Kent line. I at once called out to the driver "Wo!" upon which he immediately applied the vacuum-brake, and had either nearly or quite stopped, when the tender caught the three last vehicles of the Sevenoaks train, which was running in on No. 2 North Kent line. These vehicles were all thrown off the rails to the right, and I thought they were going to turn over, but they righted themselves, and appeared to rerail themselves opposite CD cabin. The pilot driver had no time to whistle before the collision. I jumped off to the left just as the collision occurred. The driver and fireman remained on the engine. We were none of us hurt. None of the wheels of the

pilot engine left the rails. I had no conversation with either signalman as to how the collision had been caused. The evening was very dark but fine. I was unaware that the tail of the goods train standing on No. 29 points prevented No. 22 from being worked. It was not so formerly.

2. *Joseph Dowse*y, driver; 25 years' service 12 years driver.—I came on duty on December 17 at 1.20 p.m. to sign off at 11 p.m. Between 6 and 7 p.m. I was acting as pilot in the goods yard with No. 267 engine and tender; it is a six-wheeled engine with four coupled wheels. I had the plain vacuum-brake applying to the coupled wheels of the engine and the tender wheels. I was acting under the directions of shunter Fist, who was on the engine when I left the low level to get to the back of the Tunbridge goods train. I agree more or less with what then passed between the shunter and signalman in AB cabin. I had come to a complete stop before the last vehicles of the Sevenoaks train caught the tender. Fist jumped off just as the collision occurred, and went back to tell the AB signalman what had happened. My fireman and I remained on the engine and were not injured. I did not see the slip-points as I approached them. I had a red light at each end of the engine and tender.

3. *Samuel Smith*, driver; 40 years' service, driver 29 years.—I was driver of the 5.50 up passenger train from Sevenoaks for Cannon street on the 17th December. I came on duty at 3.45 p.m. to remain till 12.20 p.m. My engine was No. 226, a tender-engine, running engine in front. It has six wheels, four of them coupled, and a six-wheeled tender. The engine and tender were fitted both with the plain and automatic vacuum-brakes, but the train, which consisted of eight vehicles, was fitted only with the plain vacuum-brake. We were running to time, and on approaching AB signals I found the signals off for London Bridge, and also the signal at CD for running into No. 2 road. I did not notice the pilot engine as I was running between AB and CD cabins, and I was quite unaware until the train stopped in the usual place at London Bridge station that there had been any collision. I had felt no drag on the engine

or anything else to indicate what had occurred. The guard came to the engine and told me that there had been a collision, and asked how it was the bell communication had not acted as he had used it. On examining the back of the train I found two or three of the communication wires broken along the carriages. No couplings or brake connections were broken, and the four rear vehicles were all on the rails with their sides grazed.

4. *Walter Prior*, guard; 16 years' service, 10 years guard.—I was guard of the 5.50 p.m. passenger train from Sevenoaks for Charing Cross on the 17th December. It consisted of eight vehicles including a third-class brake next the engine and a brake-van behind, in which I was riding. The train was fitted throughout with the plain vacuum-brake. We kept time and were approaching London Bridge station at 4.46 p.m., with the signals off at CD cabin, when I felt a shock on the rear side of the train while running between AB and CD cabins, the speed at the time being about 20 miles an hour. My brake-van at once shot off the rails to the right, but got on again after running a short distance. I endeavoured to ring the electric communication on feeling the shock, but I afterwards ascertained that the wires were severed in one or two places. I could not manage to apply my brake as the van was rocking about too much. I did not know at the time what it was that we had struck. I found the sides of the four rear vehicles damaged when we stopped, but no couplings were broken and no wheels were off the rails. I was not hurt.

5. *Henry Harvey*, signalman; 39 years' service, signalman all the time.—I have been about seven years in CD cabin, London Bridge, where I came on duty at 2 p.m. on December 17th to remain till 10 p.m. I have a signalboy with me to book the trains and attend to the speaking instruments. I remember the Tunbridge goods train arriving at about 6.35 p.m., being a long train, the rear of it would not clear No. 29 points. Shortly after this I asked permission on the telephone from AB to send the pilot engine *via* the up main line high level to go behind the goods train to the low level. AB gave permission on the telephone, and I signalled the engine to AB with the proper block signal applying to that operation, and AB acknowledged it. I then pulled over Nos. 35, 33, and 25 points, No. 25 being a slip-crossing, and gave the pilot engine a hand-signal, and the engine then came out, passed the cabin, and went towards AB. I was not at this time aware that there was direct interlocking between my No. 29 points and No. 22 points in AB cabin, and so as soon as the pilot engine had passed through No. 25 points, I put them into their normal position, to release as I thought No. 22. I heard nothing whatever after this of the pilot engine from AB, but as the Sevenoaks train was approaching on No. 2 line with signals off, I looked towards it and then saw the red light of the pilot engine in motion towards the cabin, it being at this time about the middle of the slip-road, too late for it to be of any use for me to pull over the slip-points. I showed a red light towards the pilot engine; it was too late to try

and stop the Sevenoaks train as its engine had already passed the cabin. I do not think the pilot engine had stopped when the collision took place at 6.48 p.m. I afterwards saw the marks of wheels having been off the rails, but whether from more than one vehicle I cannot say.

6. *James Turner*, signalman; 25½ years' service, 17 years signalman.—I have been about 5½ years in A.B. cabin, where I came on duty at 2 p.m. on the 17th December for eight hours. I have two boys to assist me. I remember the goods train from Tunbridge arriving about 6.32 p.m. I knew that the train was not clear in, as I could not get back No. 43 lever, which releases No. 29 points in CD cabin. At 6.42 p.m. I received a telephone message from CD cabin that the pilot engine would come out on the up main line, to get behind the goods train. I said nothing in reply, and immediately got the proper block signal for the engine, which then immediately came on before I had time to do anything more than go to the window and stop it with a red light before reaching No. 22 points, which I could not move as they were locked by No. 25 and 43, which were over in consequence of the goods train standing upon No. 29 points in CD. I then said, "Hold on, where are you going? If you go any further you will split the points." The shunter said, "Cannot we go through then?" And I replied, "Of course you cannot, you will have to go back; wait a moment." Just then CD called on the telephone, "It was right for the pilot engine to come back on behind goods," and I replied, "I cannot get my points over." I then went to the window and told the shunter that Harvey said it was all right for him to get to the back of the goods train, but how he was to get there I did not know. Just then my attention was called to a Brighton Company's train from the south box, and while I was attending to it the pilot engine went away without any hand-signal from me. Almost immediately after this I heard some tremendous thuds, and then saw the pilot engine at a standstill. I then had a message from CD saying that I had sent the engine back on the wrong road, and at the same time the shunter came into the box and said they had run into a train. After this the goods train was moved off No. 29 points, and I was able to let the pilot engine through No. 22. I deny having given any permission for the pilot engine to come out on to the main line.

7. *William French*, signal lad; six years' service, signal lad all the time.—I came on duty in AB box at 6 p.m. on the 17th December, to remain till 6 a.m. About 6.42 p.m. Turner told me he had received a message from CD about the pilot engine; I heard him reply "Right," and in about a minute the engine came opposite to the cabin, and Turner stopped it. Directly after this CD sent another telephone, saying that the engine was right to come back upon the goods train. Turner communicated this message to the shunter, but said he did not know which way he was to go. After this I saw the engine move back without any signal from Turner, who was engaged with a Brighton Company's train.

Conclusion.

This collision between a pilot engine and the rear carriages of the up Sevenoaks train was caused by a misunderstanding between the signalmen in AB and CD cabins, and the shunter in charge of the pilot engine. Owing to the length of a goods train which had arrived at the London Bridge low level station it rendered it impossible for the pilot engine, which had to assist in disposing of the goods train, to get to the rear of it by means of a set of points, (No. 29) worked by CD signalman Harvey, as the goods train was standing upon them, and in consequence Harvey asked permission on the telephone from AB signalman Turner to get the pilot engine to the back of the goods train by means of another set of points, (No. 22) worked by Turner, to the east of

those on which the goods train was standing, though Harvey ought to have known that these points were so interlocked that Turner could not move No. 22 while the goods train was standing on No. 29; the shunter (Fist) also professing ignorance that the points were interlocked. Turner says that he made no reply to Harvey's message; but the latter affirms that he did so, and as Turner's signal lad heard him say "Right" in reply to Harvey it may, I think, be assumed that Turner did assent; and he certainly by his own admission did not, as he ought to have done, forbid Harvey to send the pilot engine when he knew he could not let it go where it was required. Harvey then allowed the engine to proceed towards AB cabin, moving some points, and among them, No. 25, those of a slip-road. Turner on perceiving the pilot engine coming and approaching No. 22 points, stopped it with a red light about half way between Nos. 25 and 22 points, telling the shunter Fist that he would split No. 22 points if he went any further. Some conversation then took place on the telephone between the two signalmen, and between Turner and Fist; Fist declaring that Turner finally told him to go right back where he came from, and showing him a white light. This is more or less corroborated by the driver of the pilot engine, but is denied both by Turner and his signal lad. Upon this the pilot engine started back towards CD cabin, but instead of returning towards the low level station by the way it had come, along North Kent line No. 1, it was turned through No. 25 slip road (now in its normal position) towards North Kent up line No. 2, just as the up Sevenoaks train was passing along that line into the high level station; the corner of the tender of the pilot engine colliding with the fourth vehicle from the rear, and throwing off the rails the three vehicles behind it, these vehicles again taking the rails on coming to a crossing.

The slip-road No. 25 had meantime been restored to its normal position by Harvey, who was under the impression that by doing so he would release No. 22 points in AB cabin, and who had not seen the pilot engine coming back in time again to throw No. 25 over, and thus send the pilot engine on to North Kent up line No. 1.

Both signalmen are to be blamed—Harvey for proposing to send the pilot engine to perform under the circumstances an impossible operation, and Turner for not objecting at once to Harvey so sending it, until the goods train had been moved off No. 29 points. If Turner, when he found the pilot engine at his cabin had, at once directed either Harvey or Fist to have the goods train moved off No. 29 points, keeping the pilot engine where it was until this had been done, all would have gone well. Both Harvey and Turner are experienced signalmen, and had been on duty about 4½ hours when the collision occurred.

Leaving open the question as to whether or not shunter Fist moved back without Turner's permission, upon which the evidence disagrees, Fist is to be blamed for not having made sure that No. 25 slip road was set right for the pilot engine to return by the way it came, before allowing the driver to pass on to it. It is also strange that although he has been 10 years a shunter at London Bridge he should have been (as he says he was) ignorant that No. 22 points could not be moved while a train was standing on No. 29. He had been on duty about 9½ hours at the time of the collision.

The scheme of interlocking as between AB and CD cabins, and an adjacent cabin in the Brighton Company's yard, should be carefully examined to see if it might not be possible to make such alterations in connexion with the interlocking of some of the points referred to in this report, as would tend both to safety and to the convenience of working.

The Assistant Secretary,
Railway Department, Board of Trade.

I have, &c.,
C. S. HUTCHINSON,
Major-General, R.E.

Printed copies of the above report were sent to the Company on the 14th March.

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RAILWAY ACCIDENTS.

RETURNS

OF

ACCIDENTS AND CASUALTIES

AS REPORTED TO THE BOARD OF TRADE BY THE SEVERAL RAILWAY COMPANIES
IN THE UNITED KINGDOM,

During the Three Months ending 31st March 1890,

In pursuance of the Regulation of Railways Act (1871), 34 & 35 Vict. cap. 78;

TOGETHER WITH

REPORTS OF THE INSPECTING OFFICERS OF THE
RAILWAY DEPARTMENT TO THE BOARD OF TRADE

UPON

CERTAIN ACCIDENTS

Which were inquired into.

Presented to both Houses of Parliament by Command of Her Majesty.



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1890.

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Summary of Accidents and Casualties which have been reported to the Board of Trade as having occurred upon the Railways in the United Kingdom during the Three Months ending 31st March 1890.

I.—ACCIDENTS TO TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c.

Accidents to trains, rolling-stock, permanent-way, &c. caused the death of 9 persons, and injury to 105, viz. :—

	Killed.	Injured.	Total for the corresponding Period in 1889.	
			Killed.	Injured.
Passengers - - - - -	5	74	88	1,016
Servants of companies - - - - -	4	31	4	31
Total - - - - -	9	105	92	105

During the three months there were reported five collisions between passenger trains or part of passenger trains, by which 6 passengers were injured; 20 collisions between passenger trains and goods or mineral trains, &c., by which 5 passengers and 2 servants were killed and 58 passengers and 23 servants injured; 5 collisions between goods trains or parts of goods trains, by which 1 passenger and 3 servants were injured; 6 cases of goods trains or parts of goods trains leaving the rails, by which 1 servant was killed and 1 injured; 4 failures of machinery, springs, &c. of engines by which 1 servant was killed; 181 failures of tyres by which 8 passengers and 1 servant were injured; 74 failures of axles by which 1 servant was injured; 4 failures of couplings by which 1 passenger and 2 servants were injured.

The following cases were also reported, but they involved no personal injury :— 10 cases of passenger trains or parts of passenger trains leaving the rails; 3 cases of trains or engines travelling in the wrong direction through points; 1 case of a train running into a station at too high a speed; 19 cases of trains running over cattle or other obstructions on the line; 10 cases of trains running through gates at level crossings; 71 failures of rails; 5 cases of flooding of portions of the permanent-way; 2 slips in cuttings or embankments; 1 case of fire in a train; 2 cases of fires at stations; and 1 other accident.

Of the 181 tyres which failed, 6 were engine-tyres, 3 were tender-tyres, 2 were carriage-tyres, 6 were van-tyres, and 164 were waggon-tyres; of the waggons, 124 belonged to owners other than the Railway Companies; 143 tyres were made of iron, and 38 of steel; 2 of the tyres were fastened to their wheels by Mansell's patent method; 3 by Gibson's patent method; 169 by bolts or rivets, 2 of which left their wheels when they failed; and 7 by other methods; 12 tyres broke at rivet-holes, 1 at the weld, 43 in the solid, and 122 split longitudinally or bulged, and 3 tyres that failed did not break.

* During the three months 11 horses, 10 donkeys, 5 beasts and cows, and 14 sheep were run over and killed, and 1 beast was injured.

Of the 74 axles which failed, 37 were engine axles, viz., 31 crank or driving, and 6 leading or trailing; 3 were tender axles, 2 were carriage axles, and 31 were waggon axles, 1 of which was the axle of a salt waggon. 10 waggons belonged to owners other than the Railway Companies. Of the 31 crank or driving axles, 10 were made of iron and 21 of steel. The average milage of 8 crank or driving axles made of iron was 241,676 miles, and of 20 crank or driving axles made of steel 198,480 miles.

Of the 71 rails which broke, 26 were double-headed, 41 were single-headed; 4 were Vignoles' rails; of the double-headed rails 14 had been turned; 3 rails were made of iron and 68 of steel.

II.—ACCIDENTS TO PASSENGERS FROM CAUSES OTHER THAN ACCIDENTS TO TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c., INCLUDING ACCIDENTS FROM THEIR OWN WANT OF CAUTION OR MISCONDUCT; ACCIDENTS TO PERSONS PASSING OVER LEVEL-CROSSINGS; TRESPASSERS; AND OTHERS.

Of the 130 persons killed and 210 injured in this division, 26 of the killed and 167 of the injured were passengers. Of these 3 were killed and 8 injured by falling between carriages and platforms, viz., 1 killed and 5 injured when getting into, and 2 killed and 3 injured when alighting from, trains; 101 were injured by falling on to platforms, ballast, &c., viz., 8 injured when getting into, and 93 injured when alighting from, trains; 15 were killed and 5 injured whilst passing over the line at stations; 32 were injured by the closing of carriage doors; 4 were killed and 3 injured by falling out of carriages during the travelling of trains; and 4 were killed and 18 injured from other causes. 16 persons were killed and 8 injured whilst passing over railways at level-crossings, viz., 12 killed and 3 injured at public level-crossings, 3 killed and 4 injured at occupation crossings, and 1 killed and 1 injured at foot-crossings. 56 persons were killed and 23 injured when trespassing on the railways; 18 persons committed suicide on railways; and of other persons not specifically classed, but mostly private people having business on the companies' premises, 14 were killed and 12 injured.

III.—ACCIDENTS TO SERVANTS IN THE EMPLOY OF RAILWAY COMPANIES OR CONTRACTORS, CAUSED BY THE TRAVELLING OF TRAINS OR THE MOVEMENT OF VEHICLES USED EXCLUSIVELY UPON RAILWAYS.

During the three months there were 110 servants of companies or contractors reported as having been killed and 710 injured, in addition to those included in Division I. Of these 2 were killed and 79 injured whilst coupling or uncoupling vehicles; 8 were injured by coming in contact, whilst riding on vehicles during shunting, with other vehicles, &c. standing on adjacent lines; 13 were injured whilst passing over or standing upon buffers during shunting; 3 were killed and 44 injured in getting on or off, or by falling off engines, waggons, &c. during shunting; 2 were killed and 63 injured whilst breaking, spragging, or chocking wheels; 3 were killed and 17 injured whilst attending to ground-points, marshalling trains, &c.; 8 were killed and 70 injured whilst moving vehicles by capstans, turntables, props, &c. during shunting; and, 13 were killed and 119 injured by various other accidents during shunting operations; 2 were killed and 19 injured by falling off engines, &c. during the travelling of trains; 1 was killed and 9 injured by coming in contact with over-bridges or erections on the sides of the line during the travelling of trains; 2 were killed and 49 injured whilst getting on or off engines, vans, &c. during the travelling of trains; 2 were killed and 69 injured whilst attending to, or by the failure of, machinery, &c. of engines in steam; 23 were killed and 25 injured whilst working on the permanent-way, sidings, &c.; 35 were killed and 52 injured whilst walking, crossing, or standing on the line on duty; 5 were killed and 31 injured by being caught between vehicles; 2 were killed and 17 injured by falling or being caught between trains and platforms, walls, &c.; 7 were killed and 1 injured whilst walking, &c. on the line on the way home or to work; and 25 were injured from various other causes.

Altogether, the number of persons killed and injured on railways in the United Kingdom in the course of public traffic, during the three months ending 31st March 1890, as reported to the Board of Trade, was as follows :—

	Killed.	Injured.	Total for the corresponding Period in 1889.		Increase.		Decrease.	
			Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Passengers :								
From accidents to trains, rolling-stock, permanent-way, &c.	5	74	1	224	4	—	—	150
By accidents from other causes -	26	167	17	176	9	—	—	9
Servants of companies or contractors :								
From accidents to trains, rolling-stock, permanent-way, &c.	4	31	—	41	4	—	—	10
By accidents from other causes -	110	710	100	647	10	63	—	—
Persons passing over railways at level-crossings.	16	8	16	9	—	—	—	1
Trespassers (including suicides) -	74	23	87	25	—	—	13	2
Other persons not coming in above classification.	14	12	4	17	10	—	—	5
Total - - - -	249	1,025	225	1,139	24	—	—	114

Note.—In addition to the above, the Railway Companies have reported to the Board of Trade, in pursuance of the 6th Section of the Regulation of Railways Act, 1871, the following accidents which occurred upon their premises, but in which the movement of vehicles used exclusively upon railways was not concerned, namely :—48 passengers injured whilst ascending or descending steps at stations; 8 injured by being struck by barrows, falling over packages, &c. on station platforms; 1 killed and 13 injured by falling off platforms; and 20 injured from other causes. Of servants of companies or contractors, 3 killed and 307 injured whilst loading, unloading, or sheeting waggons; 140 injured whilst moving or carrying goods in warehouses, &c.; 1 killed and 47 injured whilst working at cranes or capstans; 1 killed and 215 injured by the falling of waggon-doors, lamps, bales of goods, &c.; 156 injured by falling off, or when getting on or off, stationary engines or vehicles; 107 injured by falling off platforms, ladders, scaffolds, &c.; 139 injured by stumbling whilst walking on the line or platforms; 60 injured whilst attending to stationary engines in sheds; 35 injured by being trampled on or kicked by horses; 2 killed and 182 injured whilst working on the line or in sidings; and 1 killed and 83 injured from various other causes. Of other persons, most of whom were transacting business on the companies' premises, 4 were killed and 42 injured,—making a total in this class of accidents of 13 persons killed and 1,602 injured.

Thus the total number of personal accidents reported to the Board of Trade by the several Railway Companies during the year amounts to 262 persons killed and 2,627 injured.

TABLE No. 1.

GENERAL TOTAL.

NUMBER of PERSONS reported, during the Three Months ending 31st March 1890, as KILLED or INJURED on the RAILWAYS of the UNITED KINGDOM, distinguishing between PASSENGERS, SERVANTS of the COMPANIES or of CONTRACTORS, and OTHER PERSONS; and distinguishing also in the case of the Two former Classes between ACCIDENTS caused by ACCIDENTS to TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c., and ACCIDENTS happening otherwise.

	ENGLAND AND WALES.		SCOTLAND.		IRELAND.		UNITED KINGDOM.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
PASSENGERS:—								
From accidents to trains, rolling-stock, permanent-way, &c. -	4	47	1	27	-	-	5	74
By accidents from other causes, including accidents from their own want of caution or misconduct - - -	21	144	2	22	3	1	26	167
SERVANTS:—								
From accidents to trains, rolling-stock, permanent-way, &c. -	1	21	3	10	-	-	4	31
By accidents from other causes, including accidents from their own want of caution or misconduct - - -	93	637	16	69	1	4	110	710
OTHER PERSONS:—								
Whilst passing over railways at level-crossings - - -	14	6	2	2	-	-	16	8
Trespassers - - -	30	17	19	5	7	1	56	23
Suicides - - -	15	-	3	-	-	-	18	-
Miscellaneous, not included in either of the above - -	11	11	3	1	-	-	14	12
TOTAL - -	189	883	49	136	11	6	249	1,025

N.B.—The Board of Trade state the cause of accident as returned by the Companies, but do not guarantee or otherwise adopt the statement, except in cases where an official inquiry has been held.

TABLE No. 2.

NUMBER of PERSONS reported, during the Three Months ending 31st March 1890, as KILLED or INJURED in the UNITED KINGDOM by the TRAVELLING of TRAINS or the MOVEMENT of VEHICLES used exclusively upon RAILWAYS, distinguishing between PASSENGERS, SERVANTS of RAILWAY COMPANIES, and OTHER PERSONS, and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury.

	ENGLAND AND WALES.		SCOTLAND.		IRELAND.		UNITED KINGDOM.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
PASSENGERS:—								
From accidents to trains, &c., <i>see Table No. 3</i> - - - - -	4	47	1	27	-	-	5	74
From falling between trains and platforms - - - - -	1	6	-	2	2	-	3	8
From falling on to the platform, ballast, &c. when getting into or out of trains - - - - -	-	89	-	11	-	1	-	101
Whilst crossing the line at stations - - - - -	12	3	2	2	1	-	15	5
By the closing of carriage doors - - - - -	-	27	-	5	-	-	-	32
From falling out of carriages during the travelling of trains - - - - -	4	2	-	1	-	-	4	3
By other accidents - - - - -	4	17	-	1	-	-	4	18
TOTAL - - - - -	25	191	3	49	3	1	31	241
SERVANTS:—								
From accidents to trains, &c., <i>see Table No. 3</i> - - - - -	1	21	3	10	-	-	4	31
Whilst coupling or uncoupling vehicles - - - - -	1	69	1	10	-	-	2	79
By coming in contact whilst riding on vehicles during shunting with other vehicles, &c. standing on adjacent lines - - - - -	-	5	-	3	-	-	-	8
Whilst passing over or standing upon buffers during shunting - - - - -	-	6	-	7	-	-	-	13
When getting on or off, or falling off, engines, waggons, &c. during shunting - - - - -	3	38	-	5	-	1	3	44
Whilst breaking, spragging, or chocking wheels - - - - -	2	56	-	7	-	-	2	63
Whilst attending to ground-points, marshalling trains, &c. - - - - -	3	16	-	1	-	-	3	17
Whilst moving vehicles by capstans, turntables, props, &c. during shunting - - - - -	5	67	3	3	-	-	8	70
By other accidents during shunting operations, not included in the preceding - - - - -	13	111	-	7	-	1	13	119
From falling off engines, &c. during the travelling of trains - - - - -	2	16	-	3	-	-	2	19
By coming in contact with over-bridges or erections on the sides of the line during the travelling of trains - - - - -	1	5	-	4	-	-	1	9
When getting on or off engines, vans, &c. during the travelling of trains - - - - -	1	45	-	4	1	-	2	49
Whilst attending to, or by the failure of, machinery, &c. of engines in steam - - - - -	2	65	-	3	-	1	2	69
Whilst working on the permanent-way, sidings, &c. - - - - -	21	23	2	2	-	-	23	25
Whilst attending to gates at level-crossings - - - - -	-	-	-	-	-	-	-	-
Whilst walking, crossing, or standing on the line on duty - - - - -	29	49	6	3	-	-	35	52
From being caught between vehicles - - - - -	4	28	1	2	-	1	5	31
From falling or being caught between trains and platforms, walls, &c. - - - - -	2	14	-	3	-	-	2	17
Whilst walking, &c. along the line on the way home or to work - - - - -	4	-	3	1	-	-	7	1
Miscellaneous - - - - -	-	24	-	1	-	-	-	25
TOTAL - - - - -	94	658	19	79	1	4	114	741
OTHER PERSONS:—								
Whilst passing over railways at level-crossings - - - - -	14	6	2	2	-	-	16	8
Trespassers - - - - -	30	17	19	5	7	1	56	23
Suicides - - - - -	15	-	3	-	-	-	18	-
Miscellaneous - - - - -	11	11	3	1	-	-	14	12
TOTAL - - - - -	70	34	27	8	7	1	104	43
SUMMARY:—								
Passengers - - - - -	25	191	3	49	3	1	31	241
Servants - - - - -	94	658	19	79	1	4	114	741
Other persons - - - - -	70	34	27	8	7	1	104	43
TOTAL ALL CLASSES - - - - -	189	883	49	136	11	6	249	1,025

TABLE No. 3.

ACCIDENTS TO TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c. reported, during the Three Months ending 31st March 1890, as having occurred on the RAILWAYS in the UNITED KINGDOM, distinguishing the different Classes of Accident, and the Number of Passengers and others, and of Servants of Railway Companies, KILLED or INJURED in each Class of Accident.

	NUMBER OF CASES.				NUMBER OF PASSENGERS AND OTHERS.								NUMBER OF SERVANTS.							
	England and Wales.	Scotland.	Ireland.	United Kingdom.	England and Wales.		Scotland.		Ireland.		United Kingdom.		England and Wales.		Scotland.		Ireland.		United Kingdom.	
					Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Collisions between passenger trains or parts of passenger trains - - -	3	2	-	5	-	3	-	3	-	-	-	6	-	-	-	-	-	-	-	-
Collisions between passenger trains and goods or mineral trains, engines, and vehicles standing foul of the line -	12	8	-	20	4	35	1	23	-	-	5	58	-	15	2	6	-	-	2	23
Collisions between goods trains or parts of goods trains -	3	2	-	5	-	-	-	1	-	-	-	1	-	52	-	3	-	-	-	3
Trains coming in contact with projections from other trains travelling on parallel lines -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Passenger trains or parts of passenger trains leaving the rails - - -	6	2	2	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Goods trains or parts of goods trains, engines, &c. leaving the rails - - -	4	2	-	6	-	-	-	-	-	-	-	-	-	1	1	-	-	-	1	1
Trains or engines travelling in the wrong direction through points - - -	3	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trains running into stations or sidings at too high a speed - - -	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trains running over cattle or other obstructions on the line - - -	15	4	-	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trains running through gates or level-crossings - -	8	-	2	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bursting of boilers or tubes, &c. of engines -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Failure of machinery, springs, &c. of engines -	3	1	-	4	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-
Failure of tyres - - -	168	13	-	181	-	8	-	-	-	-	8	-	1	-	-	-	-	-	-	1
„ wheels - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
„ axles - - -	50	21	3	74	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
„ brake apparatus -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
„ couplings - - -	3	-	1	4	-	1	-	-	-	-	1	-	2	-	-	-	-	-	-	2
„ ropes used in working inclines -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
„ tunnels, bridges, viaducts, culverts, &c. -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Broken rails - - -	65	6	-	71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Flooding of portions of permanent-way - - -	5	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Slippages in cuttings or embankments - - -	2	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Derailments in trains - -	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Accidents at stations or involving injury to bridges or viaducts -	1	1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other accidents - - -	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	-	-	-	-	4	47	1	27	-	-	5	74	1	21	3	10	-	-	4	31

TABLE No. 4.

ACCIDENTS to TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c. on the RAILWAYS in the UNITED KINGDOM, reported
RAILWAYS on which the same have occurred, and the Number of Passengers and others, and

NAME OF COMPANY.	Col- lisions between pas- senger trains or parts of pas- senger trains.	Col- lisions between pas- senger trains and goods or mineral trains, engines, &c.	Col- lisions between goods trains or parts of goods trains.	Trains coming in contact with pro- jections from other trains travel- ling on parallel lines.	Pas- senger trains or parts of pas- senger trains leaving the rails.	Goods trains or parts of goods trains, engines, &c. leaving the rails.	Trains or engines travel- ling in the wrong direction through points.	Trains running into stations or sidings at too high a speed.	Trains running over cattle or other obstruc- tions on the line.	Trains running through gates at level- cross- ings.	The bursting of boilers or tubes, &c. of engines.	The failure of ma- chinery, springs, &c. of engines.	The failure of tyres.
ENGLAND AND WALES.													
Cambrian - - -	-	-	-	-	1	-	-	-	-	-	-	-	-
Carlisle Citadel Station -	-	1	-	-	-	-	-	-	-	-	-	-	-
East and West Junction -	-	-	-	-	-	-	-	1	-	-	-	-	-
Eastern and Midlands -	-	-	-	-	-	-	-	-	-	-	-	-	-
Furness - - -	-	-	-	-	-	-	-	-	-	-	-	-	1
Garstang and Knot End -	-	-	-	-	-	-	-	-	-	-	-	-	1
Great Eastern - - -	1	1	-	-	1	-	1	-	1	2	-	-	1
Great Northern - -	-	1	-	-	-	-	-	-	-	-	-	2	2
Great Northern and Great Eastern Joint.	-	-	-	-	-	-	-	-	-	-	-	-	-
Great Western - - -	-	1	-	-	-	-	-	1	7	2	-	-	4
Lancashire and Yorkshire -	1	1	-	-	-	-	1	-	1	-	-	-	1
London and North-Western -	-	1	-	-	-	-	-	-	-	-	1	-	14
London and North-Western and Great Western Joint.	-	-	-	-	-	-	-	-	-	1	-	-	-
London and South-Western -	-	1	1	-	-	1	1	-	-	3	-	-	3
London, Brighton, and South Coast.	-	-	-	-	-	-	-	-	-	-	-	-	-
London, Chatham, and Dover	-	1	-	-	-	1	-	-	-	-	-	-	1
Manchester, Sheffield, and Lin- colnshire.	-	-	-	-	-	-	-	-	1	-	-	-	-
Metropolitan - - -	1	-	-	-	-	-	-	-	-	-	-	-	-
Midland - - -	-	2	1	-	2	-	-	-	-	-	-	-	14
Neath and Brecon - -	-	-	-	-	1	1	-	-	-	-	-	-	-
North-Eastern - - -	-	-	1	-	-	1	-	-	4	-	-	-	4
North London - - -	-	-	-	-	-	-	-	-	-	-	-	-	-
North Staffordshire - -	-	2	-	-	-	-	-	-	-	-	-	-	1
Rhondda and Swansea Bay -	-	-	-	-	1	-	-	-	-	-	-	-	-
Private Owners - - -	-	-	-	-	-	-	-	-	-	-	-	-	121
TOTAL, ENGLAND AND WALES - - -	3	12	3	-	6	4	3	1	15	8	-	3	168

TABLE No. 4.

During the Three Months ending 31st March 1890, distinguishing the different CLASSES of ACCIDENTS, the different Servants of Railway Companies, KILLED or INJURED on each Railway by those Accidents.

The failure of wheels.	The failure of axles.	The failure of brake apparatus.	The failure of couplings.	The failure of ropes used in working inclines.	The failure of tunnels, bridges, viaducts, or culverts.	Broken rails.	The flooding of portions of permanent-way.	Slips in cuttings or embankments.	Fire in trains.	Fire at stations or involving injury to bridges or viaducts.	Other accidents.	Number of Passengers and others.		Number of Servants.		Total all Classes.	
												Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	4	11	-	4	4	15
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	1	-	-	-	-	10	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	2	-	-	-	-	-	-	1	-	-	-	-	9	-	2	-	11
-	2	-	-	-	-	2	-	-	-	-	-	-	5	-	4	-	9
-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-
-	6	-	-	-	-	6	5	1	-	-	-	-	2	-	-	-	2
-	1	-	-	-	-	3	-	-	-	-	-	-	2	-	2	-	4
-	12	-	-	-	-	9	-	-	-	-	-	-	2	1	-	1	2
-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
-	3	-	3	-	-	1	-	-	1	1	-	-	5	-	4	-	9
-	1	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-	-
-	3	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-
-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
-	2	-	-	-	-	7	-	-	-	-	-	-	8	-	3	-	11
-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
-	7	-	-	-	-	8	-	-	-	-	-	-	-	-	2	-	2
-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
-	1	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	3
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	50	-	3	-	-	65	5	2	1	1	-	4	47	1	21	5	68

TABLE No. 4.—Number of Accidents to Trains,

NAME OF COMPANY.	Col- lisions between pas- senger trains or parts of pas- senger trains.	Col- lisions between pas- senger trains and goods or mineral trains, engines, &c.	Col- lisions between goods trains or parts of goods trains.	Trains coming in contact with pro- jections from other trains travel- ling on parallel lines.	Pas- senger trains or parts of pas- senger trains leaving the rails.	Goods trains or parts of goods trains, engines, &c. leaving the rails.	Trains or engines travel- ling in the wrong direction through points.	Trains running into stations or sidings at too high a speed.	Trains running over cattle or other obstruc- tions on the line.	Trains running through gates at level- cross- ings.	The bursting of boilers or tubes, &c. of engines.	The failure of ma- chinery, springs, &c. of engines.	The failure of tyres.
SCOTLAND.													
Caledonian - - -	1	2	-	-	-	1	-	-	1	-	-	-	4
City of Glasgow Union -	-	1	-	-	-	-	-	-	-	-	-	-	-
Glasgow and Paisley Joint -	-	1	-	-	-	-	-	-	-	-	-	-	-
Glasgow and South-Western -	1	1	1	-	1	-	-	-	1	-	-	-	-
Glasgow, Barrhead, and Kilmarnock.	-	-	-	-	-	-	-	-	-	-	-	1	-
Highland - - -	-	-	-	-	-	-	-	-	-	-	-	-	-
North British - - -	-	3	1	-	-	-	-	-	2	-	-	-	6
Portpatrick and Wigtownshire Joint Committee.	-	-	-	-	1	1	-	-	-	-	-	-	-
Private Owners - - -	-	-	-	-	-	-	-	-	-	-	-	-	3
TOTAL, SCOTLAND -	2	8	2	-	2	2	-	-	4	-	-	1	13
IRELAND.													
Belfast and County Down -	-	-	-	-	-	-	-	-	-	-	-	-	-
Great Northern of Ireland -	-	-	-	-	-	-	-	-	-	-	-	-	-
Great Southern and Western of Ireland.	-	-	-	-	-	-	-	-	-	-	-	-	-
Waterford and Limerick -	-	-	-	-	2	-	-	-	-	2	-	-	-
TOTAL, IRELAND -	-	-	-	-	2	-	-	-	-	2	-	-	-
TOTAL, UNITED KINGDOM	5	20	5	-	10	6	3	1	19	10	-	4	181

lling-Stock, Permanent-Way, &c.—*continued.*

	The failure of axles.	The failure of brake apparatus.	The failure of couplings.	The failure of ropes used in working inclines.	The failure of tunnels, bridges, viaducts, or culverts.	Broken rails.	The flooding of portions of permanent-way.	Slips in cuttings or embankments.	Fire in trains.	Fire at stations or involving injury to bridges or viaducts.	Other accidents.	Number of Passengers and others.		Number of Servants.		Total all Classes.	
												Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
-	9	-	-	-	-	1	-	-	-	-	-	-	1	1	1	1	2
-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	6
-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	1	-	3	-	2	-	5
-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	8	-	-	-	-	3	-	-	-	1	-	1	17	2	7	3	24
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	21	-	-	-	-	6	-	-	-	1	1	1	27	3	10	4	37
-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	3	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	74	-	4	-	-	71	5	2	1	2	1	5	74	4	31	9	105

TABLE No. 5.

NUMBER of SERVANTS of RAILWAY COMPANIES and CONTRACTORS reported, during the Three Months ending 31st March used exclusively upon RAILWAYS, distinguishing the Number which have occurred on each Railway or System of

NAME OF COMPANY.	From acci- dents to trains, &c. See Table No. 4.		Whilst coupling or uncoupling vehicles.		By coming in contact whilst riding on vehicles during shunting with other vehicles, &c. standing on adjacent lines.		Whilst passing over, or standing upon, buffers during shunting.		When getting on or off, or falling off, engines, waggons, &c. during shunting.		Whilst braking, spragging, or chocking wheels.		Whilst attending to ground- points, marshalling trains, &c.		Whilst moving vehicles by capstans, turntables, props, &c. during shunting.		By other accident during shunting operations, not included in the preceding.	
	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.
ENGLAND AND WALES.																		
Brecon and Merthyr Tydfil Junction -	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cambrian - - -	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carlisle Citadel Station Committee -	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cheshire Lines Committee - -	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Furness - - -	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Great Eastern - - -	-	2	1	6	-	-	1	-	4	-	1	-	2	-	3	1	1	-
Great Northern - - -	-	4	-	2	-	-	-	-	-	1	-	-	-	1	-	2	-	-
Great Western - - -	-	-	-	12	-	-	1	-	6	-	9	-	2	-	9	3	20	-
Hull, Barnsley, and West Riding Junction Railway and Dock.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lancashire and Yorkshire - -	-	2	-	9	-	2	-	-	7	1	5	2	1	1	6	2	20	-
Lancashire and Yorkshire and London and North-Western Joint.	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
London and North-Western - -	1	-	-	20	-	-	1	2	8	-	21	-	4	-	29	2	30	-
London and North-Western and Great Western.	-	-	-	-	-	-	-	-	1	-	2	-	-	-	1	-	1	-
London and South-Western - -	-	4	-	2	-	-	1	1	1	-	-	-	1	-	2	1	5	-
London, Brighton, and South Coast -	-	-	-	2	-	-	-	-	-	-	1	-	-	-	-	-	-	-
London, Chatham, and Dover -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manchester, Sheffield, and Lincolnshire	-	-	-	3	-	-	-	-	1	-	2	-	-	-	2	1	1	-
Mersey - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metropolitan District - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Midland - - -	-	3	-	-	-	1	-	1	-	5	-	5	-	2	3	6	1	11
Midland and Great Western - -	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Normanton Joint Station Committee -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
North and South Western Junction -	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
North-Eastern - - -	-	2	-	5	-	1	-	1	-	5	-	8	-	2	-	7	-	22
North London - - -	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
North Staffordshire - - -	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sheffield and Midland Committee -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Somerset and Dorset - - -	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-
South-Eastern - - -	-	-	-	1	-	-	-	-	-	-	-	-	1	-	1	-	-	-
Taff Vale - - -	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
TOTAL, ENGLAND AND WALES	1	21	1	69	-	5	-	6	3	38	2	56	3	16	5	67	13	111

TABLE No. 5.

as KILLED or INJURED in the UNITED KINGDOM by the TRAVELLING of TRAINS or the MOVEMENT of VEHICLES
 ay, and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury.

om- ing off nes, uring ravel- g of us.	By coming in contact with over- bridges or erections on the sides of the line during the travelling of trains.		When getting on or off engines, vans, &c. during the travelling of trains.		Whilst attending to, or by the failure of, machinery, &c. of engines in steam.		Whilst working on the permanent- way, sidings, &c.		Whilst attending to gates at level- crossings.		Whilst walking, crossing, or standing on the line on duty.		From being caught between vehicles.		From falling or being caught between trains and platforms, walls, &c.		Whilst walking, &c. on the line on the way home or to work.		Mis- cella- neous		Total.		
	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
-	-	-	-	-	-	6	2	1	-	-	1	6	-	3	1	1	-	-	-	3	6	40	
-	-	-	-	-	1	1	-	2	-	-	3	1	-	-	-	1	-	-	-	-	8	11	
1	-	-	-	8	-	6	5	4	-	-	6	7	-	1	1	2	-	-	-	7	15	95	
-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
1	-	-	-	6	-	5	2	3	-	-	3	6	-	3	-	3	2	-	-	3	14	83	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
8	-	4	-	16	1	38	5	7	-	-	4	10	1	11	-	1	1	-	-	3	17	211	
-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
2	-	1	1	3	-	1	-	-	-	-	1	1	1	1	-	3	-	-	-	2	5	30	
-	-	-	-	-	-	-	2	-	-	-	-	1	-	-	-	-	-	-	-	-	2	4	
-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	1	1	
-	1	-	-	-	-	-	-	-	-	-	2	1	-	-	-	-	-	-	-	1	4	11	
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	
-	-	-	-	1	-	1	1	-	-	-	8	6	1	3	-	-	1	-	-	1	15	46	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
1	-	-	-	9	-	7	1	1	-	-	-	3	-	5	-	3	-	-	-	3	1	85	
-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	1	-	5	
-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	1	2	
-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	
-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	5	
1	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	1	3	
16	1	5	1	45	2	65	21	23	-	-	29	49	4	28	2	14	4	-	-	24	94	658	

TABLE No. 5.—Number of Servants reported

NAME OF COMPANY.	From acci- dents to trains, &c. <i>See Table No. 4.</i>		Whilst coupling or uncoupling vehicles.		By coming in contact whilst riding on vehicles during shunting with other vehicles, &c. standing on adjacent lines.		Whilst passing over, or standing upon, buffers during shunting.		When getting on or off, or falling off, engines, wagons, &c. during shunting.		Whilst braking, spragging, or choking wheels.		Whilst attending to ground- points, marshalling trains, &c.		Whilst moving vehicles by capstans, turntables, props, &c. during shunting.		By other accidents during shunting operations not included in the preceding.	
	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.	Killed.	In- jured.
SCOTLAND.																		
Caledonian - - - -	1	1	1	7	-	2	-	4	-	1	-	6	-	-	2	1	-	3
Dundee and Arbroath Joint - -	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Glasgow and Paisley Joint - -	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Glasgow and South-Western - -	-	2	-	1	-	1	-	1	-	1	-	-	-	1	1	-	-	3
Highland - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
North British - - - -	2	7	-	1	-	-	-	1	-	3	-	1	-	-	-	2	-	1
TOTAL, SCOTLAND - -	3	10	1	10	-	3	-	7	-	5	-	7	-	1	3	3	-	7
IRELAND.																		
Great Northern of Ireland - -	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Great Southern and Western of Ireland	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Midland Great Western of Ireland -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
TOTAL, IRELAND - -	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1
TOTAL, UNITED KINGDOM -	4	31	2	79	-	8	-	13	3	44	2	63	3	17	8	70	13	119

s Killed or Injured, &c.—continued.

From falling off engines, &c. during the travelling of trains.		By coming in contact with over-bridges or erections on the sides of the line during the travelling of trains.		When getting on or off engines, vans, &c. during the travelling of trains.		Whilst attending to, or by the failure of, machinery, &c. of engines in steam.		Whilst working on the permanent-way, sidings, &c.		Whilst attending to gates at level-crossings.		Whilst walking, crossing, or standing on the line on duty.		From being caught between vehicles.		From falling or being caught between trains and platforms, walls, &c.		Whilst walking, &c. on the line on the way home or to work.		Miscellaneous.		TOTAL.	
Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
-	1	-	3	-	3	-	2	-	-	-	-	3	1	-	-	-	1	2	-	-	1	9	37
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2
-	1	-	-	-	-	-	-	-	1	-	-	-	1	-	1	-	-	1	-	-	-	1	15
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-
-	1	-	1	-	1	-	1	2	-	-	-	3	1	1	1	-	2	-	-	-	-	8	24
-	3	-	4	-	4	-	3	2	2	-	-	6	3	1	2	-	3	3	1	-	1	19	79
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	2
-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	4
2	19	1	9	2	49	2	69	23	25	-	-	35	52	5	31	2	17	7	1	-	25	114	741

TABLE No. 6.

TABLE showing the different OCCUPATIONS of SERVANTS of RAILWAY COMPANIES and CONTRACTORS who were KILLED and INJURED during the three months ending 31st March 1890, and classifying their INJURIES as far as practicable.

CLASS OF SERVICE.	Fatal.	Amputations.			Fractures.		Dislocations.	Crushes.			Scalds, Burns.	Sprains, Cuts, or Bruises.	Severe.	Shaken.	Slight.	Unspecified Injury to					Miscellaneous.	Total Injured.
		Legs or Arms.	Feet or Hands.	Toes or Fingers.	Legs or Arms.	Collar-bones or Ribs.		Legs or Arms.	Feet or Hands.	Body.						Head.	Body.	Legs or Arms.	Feet or Hands.			
Brakemen and Goods-guards -	9	4	3	1	3	3	2	5	15	6	1	33	4	2	3	8	18	21	10	-	142	
Capstanmen -	2	-	-	-	-	-	-	1	4	-	-	3	-	-	-	-	-	3	1	-	12	
Carmen -	1	-	-	-	-	1	-	-	-	1	-	-	-	-	-	1	-	-	-	-	3	
Carriage-cleaners -	4	-	-	-	-	-	-	1	1	-	-	-	-	-	-	1	-	-	1	-	4	
Carriage or waggon examiners	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	2	-	-	-	3	
Checkers -	2	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	1	-	-	-	3	
Chockers, Chain-boys, and Slippers.	1	1	-	-	1	1	-	-	2	2	-	5	-	-	2	-	-	3	2	-	19	
Clerks -	2	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	2	
Engine-cleaners -	2	1	-	-	-	-	-	-	1	2	-	1	-	-	-	1	-	3	2	-	11	
Engine-drivers -	9	1	1	1	3	2	-	1	4	-	4	27	1	2	2	4	13	8	4	-	78	
Firemen -	2	1	-	1	1	1	-	1	9	1	9	20	2	-	2	8	6	7	9	-	78	
Gatekeepers -	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	
Greasers -	1	-	-	-	-	-	-	-	1	-	-	1	-	-	-	1	-	1	-	-	4	
Guards, Passenger -	-	-	-	-	-	1	-	-	2	1	-	11	1	2	1	1	1	8	5	-	34	
Horse-drivers -	3	-	-	-	2	-	-	-	2	-	-	3	-	1	-	-	2	2	2	-	14	
Inspectors -	1	-	-	-	-	-	-	-	-	-	-	1	-	1	-	1	2	1	1	-	7	
Labourers -	11	-	1	-	1	1	-	1	2	3	-	10	1	1	-	2	3	3	5	-	34	
Lampmen -	1	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	2	
Loaders and Sheeters -	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	2	
Mechanics -	3	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	2	1	-	5	
Messengers -	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	
Number-takers -	-	-	-	-	1	-	-	3	1	-	-	2	-	-	1	-	-	-	-	-	8	
Permanent-way Men -	21	-	-	-	4	-	-	3	5	-	-	7	2	-	-	1	1	3	1	-	27	
Pointsmen -	-	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	1	-	-	4	
Policemen -	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	
Porters -	14	1	-	1	3	5	-	7	11	9	-	20	6	2	2	3	9	16	20	-	115	
Shunters -	9	1	-	-	4	3	-	2	17	4	-	24	3	1	1	5	7	11	11	-	94	
Signal-fitters -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	
Signalmen -	1	-	-	-	-	1	-	-	-	-	-	-	2	-	-	-	2	-	1	-	6	
Station-masters -	1	-	-	-	-	-	-	-	-	1	-	2	-	-	-	-	-	-	-	-	3	
Ticket-collectors -	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	
Watchmen -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Yardsmen -	1	-	-	-	-	1	-	-	1	-	-	3	-	-	-	1	-	-	-	-	6	
Miscellaneous -	3	1	-	-	-	1	-	-	1	-	-	3	-	-	-	1	3	1	-	-	11	
Contractors' Servants -	6	-	-	-	-	-	-	2	-	1	-	1	-	-	-	-	-	1	-	-	5	
TOTAL -	114	12	6	4	23	23	4	27	80	34	15	181	23	12	14	39	71	97	76	-	741	

TABLE No. 7.

NUMBER of PERSONS reported, during the Three Months ending 31st March 1890, as having been KILLED or INJURED whilst upon the Companies' Premises, by Accidents in which the Movement of Vehicles used exclusively upon Railways was not concerned, distinguishing between Passengers, Servants of Companies, and other Persons, and classifying, as far as practicable, the Nature and Causes of the Accidents occasioning the Death or Injury.

	ENGLAND AND WALES.		SCOTLAND.		IRELAND.		UNITED KINGDOM.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
PASSENGERS :—								
Whilst ascending or descending steps at stations - - - - -	—	48	—	—	—	—	—	48
By being struck by barrows, by falling over packages, &c. on station platforms -	—	8	—	—	—	—	—	8
From falling off platforms - - -	1	13	—	—	—	—	1	13
By other accidents - - - - -	—	20	—	—	—	—	—	20
TOTAL - - - - -	1	89	—	—	—	—	1	89
SERVANTS :—								
Whilst loading, unloading, or sheeting waggons - - - - -	3	301	—	6	—	—	3	307
Whilst moving or carrying goods in warehouses, &c. - - - - -	—	140	—	—	—	—	—	140
Whilst working at cranes or capstans -	1	47	—	—	—	—	1	47
By the falling of waggon-doors, lamps, bales of goods, &c. - - - - -	—	213	1	2	—	—	1	215
From falling off, or when getting on or off, stationary engines or vehicles -	—	151	—	5	—	—	—	156
From falling off platforms, ladders, scaffolds, &c. - - - - -	—	107	—	—	—	—	—	107
By stumbling whilst walking on the line or platforms - - - - -	—	139	—	—	—	—	—	139
Whilst attending to stationary engines in sheds - - - - -	—	60	—	—	—	—	—	60
By being trampled on or kicked by horses	—	35	—	—	—	—	—	35
Whilst working on the line or in sidings	2	182	—	—	—	—	2	182
Miscellaneous - - - - -	1	83	—	—	—	—	1	83
TOTAL - - - - -	7	1,458	1	13	—	—	8	1,471
PERSONS ON BUSINESS AT STATIONS AND OTHERS - - - - -								
	3	41	1	1	—	—	4	42
SUMMARY :—								
Passengers - - - - -	1	89	—	—	—	—	1	89
Servants - - - - -	7	1,458	1	13	—	—	8	1,471
Persons on business at stations and others	3	41	1	1	—	—	4	42
TOTAL ALL CLASSES -	11	1,588	2	14	—	—	13	1,602

REPORTS TO THE BOARD OF TRADE BY INSPECTING OFFICERS OF
THE RAILWAY DEPARTMENT UPON CERTAIN ACCIDENTS WHICH
HAVE BEEN INQUIRED INTO.

CITY OF GLASGOW UNION :

Major Marindin's report on the collision which occurred on the 15th January at Haghill Junction, near Alexandra Park station, between a North British Company's goods train and a Glasgow and South-Western Company's passenger train - - - - - 23

GLASGOW AND SOUTH-WESTERN :

Major Marindin's report on the collision which occurred on the 7th March at St. Enoch station, Glasgow, between an incoming passenger train and a train of empty carriages - - - - - 28

GREAT EASTERN :

Colonel Rich's report on the accident which occurred on the 5th February between Arlesford and Wyvenhoe stations, when part of a passenger train left the rails owing to the breaking of the tyre of the left leading-wheel of the engine - - - 31

GREAT NORTHERN :

Major Marindin's report on the collision which occurred on the 2nd January at Colvick station, between a Great Northern Company's passenger train and the rear of a London and North-Western Company's express goods train - - - 33

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LONDON AND SOUTH-WESTERN :

Page

Major Marindin's report on the collision which occurred on the 20th January at Bournemouth West station, between an incoming passenger train and a train of empty carriages - - - 33

MIDLAND :

Major Marindin's report on the collision which occurred on the 28th March at Masboro' station, between a passenger train and an express goods train - - - - - 41

NORTH BRITISH :

Major Marindin's report on the collision which occurred on the 20th January at Maryhill station, between a goods train and two light engines, which were driven against a passenger train which was standing at the platform - - - 45

Major Marindin's report on the collision which occurred on the 25th January at Burnmouth station, between a passenger train and a goods train - - - - - 51

CITY OF GLASGOW UNION RAILWAY.

Board of Trade, (Railway Department),
London, S.W., January 28, 1890.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 20th instant, the result of my enquiry into the causes of a collision which occurred on the 15th instant at Haghill junction, near Alexandra Park station, on the City of Glasgow Union Railway.

In this case the 7.40 p.m. North British up goods train from Camlachie to Sighthill (consisting of engine and tender, 41 loaded waggons, and brake-van, with tank-engine in rear) overran the home-signal for the Parkhead branch at Haghill junction, and came into collision, at about 9.51 p.m., with the 9.45 p.m. Glasgow and South-Western down passenger train from Springburn to St. Enoch station (consisting of tank-engine, running bunker first, two third-class, one first-class, and two third-class carriages, the front and rear vehicles having brake-compartments), which was crossing the junction at the time, having just left Alexandra Park station.

The engine and two leading vehicles got clear across the path of the goods train, but the third vehicle was slightly damaged at the left trailing corner, and the fourth and fifth vehicles were thrown over flat on to their right sides. The coupling between the third and fourth vehicles was broken. The goods train engine ran forward on to the up passenger line, and came to a stand about 110 yards from the branch up home-signal.

Six passengers were injured, but none very seriously.

The North British goods engine had the buffer-beam damaged and a buffer broken, and three Glasgow and South-Western carriages were considerably damaged. (For particulars see Appendix.)

Description.

At Haghill junction, which is a little south of Alexandra Park station, the double goods line to Parkhead junction leaves the City Union double line on the down or east side, the facing-points of the junction being upon the down main line. The Alexandra Park station signals are worked from Haghill junction box, which is situated in the angle between the branch and the main lines, 173 yards south of the station platform. Between the station and the signal-box and south of the junction points there is a wide over-bridge crossing the main line. The main line falls from the north towards the junction upon a gradient of 1 in 75, and it is thereupon a right-hand curve looking south, with a radius of $1\frac{1}{2}$ miles.

The Parkhead branch leaves the main line upon a left-hand curve, looking south-east, of $12\frac{1}{2}$ chains radius, and for the first 380 yards it falls from the junction upon a gradient of 1 in 100. Block working is in force upon both main and branch lines, the nearest block-cabins being Garngad to the north, and Bellgrove to the south upon the main line, and Parkhead junction, about 70 chains to the south-east, on the branch.

Both the main line and the branch were opened in 1875 for goods traffic only, and the main line was opened for passenger traffic as far as Alexandra Park in 1877, and on to Barnhill in 1883.

Upon the main line there are down distant, home, starting, and advance starting signals, and before the distant-signal can be taken off all the others must be lowered. The junction-signal is the station down starting-signal at the south end of the platform.

On the branch there are up home and distant signals, the former being 23 yards east from the signal-box, and the latter being 620 yards outside the home-signal.

The home-signal can be seen from an approaching engine as soon as it comes through an over-bridge about 330 yards distant, but owing to the curve it cannot be seen from the left or driver's side until an engine is within a short distance of it. From the fireman's side the view is uninterrupted.

The following distances from the signal-box northwards should be noted:—

To point of collision or crossing of the down main and up branch lines	-	-	-	-	-	-	35 yards.
To centre of over-bridge	-	-	-	-	-	-	45 "
To junction facing-points	-	-	-	-	-	-	86 "
To down starting-signal	-	-	-	-	-	-	162 "
To south end of down platform at Alexandra Park	-	-	-	-	-	-	173 "

There are no safety-points on the goods line.

2. *Duncan McRae*, goods guard; 18 years' service, 16 years goods guard.—I commenced work on December 2nd, at 11.35 a.m. to continue till 12.30 a.m. I was guard of the 12.5 p.m. train from Edinburgh for Buchanan Street. We started punctually, did work along the road, and left Sighthill goods yard at 5.18 p.m., when the load consisted of two loaded, six empty waggons, and a brake-van in which I was alone. The distant and home signals for Sighthill West were at danger as we approached them, and we stopped at the home-signal. After standing there seven minutes it was lowered, and the train had got into motion and moved ahead a short distance when the brake-van was run into by engine No. 345, an empty engine. I was inside the van when the collision occurred, having gone inside just as we started, previously to which I had not seen the empty engine. It was a hard blow, and I was knocked down in the van and hurt. I had to go off duty six days. No wheels were knocked off the rails in my train, and it proceeded on to St. Rollox station, where the driver stopped, the train being divided into three parts as stated by the driver, the van being about 10 yards behind the waggons. It was a fine clear night, but dark. Two side lights and a tail lamp were all burning at the back end of my van. I had lighted them between Mossend and Carnbrae iron works, and I had seen them burning before leaving Sighthill goods yard.

3. *David Marshall*, goods driver; 28 years' service, 17 years driver.—I came on duty on December 2nd at 4.45 p.m. to remain till 4.5 a.m. I started from St. Rollox at about 5.15 p.m. on my way to Buchanan Street, to take out the 5.45 p.m. goods train for Leith. I was running tender first, fireman Buick being alone with me on the footplate. The brake-power on the engine was derived from a steam-brake applying to the six coupled wheels, and a hand-brake applying to the six tender wheels. I entered the main line on the Edinburgh side of the Sighthill East starting-signal for Buchanan Street, and this signal was off for me when I came out on the main line, and the distant-signal from Sighthill West, which is below this starting-signal, was also lowered. I went forward towards Glasgow, and on coming in sight of the home-signal at Sighthill West cabin, at which time I was about 20 or 30 yards from the tail of the goods train, I saw this signal also off. I had seen the tail light of the goods train when I was passing Sighthill East cabin, and took it to be in the siding, and I did not realise that it was on the main line till within 15 or 20 yards from it. I had not seen it or the signal sooner from smoke and steam beating down from St. Rollox yard on the line. I do not think my speed was more than 15 miles an hour. On seeing the goods train, I at once shut off steam and applied the steam-brake, Buick applying the hand-brake, and we struck the train at about four miles an hour; I could not say whether or not it was in motion. No wheels left the rails in my engine or tender. I stood for a minute or two after the collision, and then seeing the passenger train coming, I got into motion and had moved forward three or four yards when it struck my engine with a sharp blow, much greater than the one I had given to the goods train. The blow sent me forward, but I stopped a short distance before reaching the van of the goods train. I heard no whistle from the engine of the passenger train before the collision; just after the collision I noticed that the Sighthill home-signal was at danger. My engine had a red light at the bottom of the chimney and another on the cab at the six-ft. side of the engine. I am sure these were burning. The fireman was the first to see the goods van lights. I was deceived by both signals being off, and had not expected to see any obstruction in my way. The passenger train was close at hand before I saw it, and on seeing it I tried to get ahead. The night was fine but dark. I was slightly hurt and was off duty for a week. The fireman had jumped off after the first collision to look round the engine and was not on the engine when the second collision occurred. I therefore took off the hand-brake before moving ahead. I gave a brake-

whistle to the passenger train when it was 20 or 30 yards off. I had seen the signalman when I passed Sighthill east cabin engaged with his book.

4. *William Buick*, fireman; 13 years' service, 12 years fireman.—I am Marshall's regular fireman and was with him on the 2nd December. I agree with his evidence except that I saw the Sighthill West home-signal off when about half-way between it and the east starting-signal, and the goods train about the same time. At first I did not realise that the goods train was on the main line, and I called the driver's attention, but he said it could not be as the signals were off, but on looking again I saw it was on the main line, and I then reversed the engine, Marshall applying steam and putting on the steam-brake. My hand-brake had been on hard after coming on the main line, to help to get the water out of the cylinders. After the collision, I dropped off, intending to go and see if the goods guard was hurt, and to speak to the signalman, but when I got just opposite to the cabin the second collision occurred. I heard the passenger train coming and turned my gauge lamp which I had in my hand towards it. I do not know when the Sighthill West home-signal was put to danger. The goods van was on the Glasgow side of the cabin. I heard my driver give two sharp whistles just before the collision.

5. *David Duncan*, driver; 34 years' service, 24 years driver.—I came on duty on December 2nd at 11.0 a.m., to continue to 9.25 p.m. I was driver from Stirling of the 12.40 p.m. from Oban for Glasgow. My engine was No. 35, a six-wheeled engine, four wheels coupled (driving and trailing), and a six-wheeled tender, and the train consisted of five vehicles, the front and rear ones being brake-vans with one guard in the rear van. The four coupled wheels of the engine, the six tender wheels, all the wheels of the brake-vans, and four wheels of each of the carriages were fitted with the Westinghouse brake. We left Stirling at right time, viz., 4.40 p.m., and stopped at Larbert and Greenhill, also leaving at right time, St. Rollox being the next stop. The brakes worked properly at Larbert and Greenhill, the air-pressure being about 75 lbs. After leaving Greenhill I had a clear run till I came to Germiston distant-signal, which was at danger, but on approaching the home and advanced signals they were taken off; the next signal, viz., the distant-signal for Sighthill East, was at danger as I passed it, but the home and advanced signals were taken off as I approached them. I passed the advanced signal at a speed of about 15 miles an hour, the distant-signal from Sighthill West, a lower arm on the Sighthill East advanced signal being at danger. I saw the Sighthill West home-signal at danger as I passed the distant-signal, and it remained at danger, and I was approaching it prepared to stop at it if it was not taken off. I was still travelling at a speed of about 15 miles an hour, when my fireman cried out "there is an engine before us," I seeing it at the same time. We were then only about 16 yards off, and I had only time to apply the Westinghouse brake with full force before we struck the engine, which I do not think was in motion. Steam had been off for two miles back, and I had no time to reverse. I had no time to give the brake-whistle, and I heard none from the light engine. The speed decreased to about 12 miles an hour on collision, after which my engine went forward a few yards. The light engine had gone away when I stopped. One pair of wheels (trailing) of the second carriage left the rails and nothing else, and not much damage was done. Neither I nor the fireman jumped off. I had two ribs injured and was off work for a week. I had no expectation of meeting anything outside the Sighthill west home-signal.

6. *William Laing*, fireman; four years' service, two years fireman.—I have been with Duncan for about three weeks, his proper fireman having been injured. I joined the Oban train at Stirling on December 2nd. My place is on the right-hand side of the engine. I agree with the driver's evidence.

I saw the two lights on the light engine when passing Sighthill East starting-signal, but at first thought it was on the loop line as the home-signal at Sighthill east was off; but on looking again I saw it was on the main line, and roared to the driver to stop. He at once applied the Westinghouse brake and was about to reverse his engine, when he struck the light engine at a reduced speed of about 10 miles an hour. I did not jump off and was not hurt. I heard no whistle before the collision.

7. *William Donaldson*, guard; 16 years' service, nine years guard.—I joined the 12.40 p.m. from Oban at Stirling; it consisted of two brake-vans and three carriages between them. I was in the rear brake-van, from which I could apply the Westinghouse brake. We left Stirling punctually at 4.40 p.m., and also Larbert and Greenhill at right time, viz., 5.4 p.m. from the latter, being due at St. Rollox at 5.29 p.m., the distance from Greenhill to St. Rollox being about 17½ miles. The first signal against us after leaving Greenhill was the distant-signal for Germiston, but the home and starting signals were lowered before we had come to a stand; at Sighthill East the distant-signal was at danger, but the home and starting signals were lowered immediately after passing the distant-signal. The distant and home signals for Sighthill West were at danger and remained so till the collision. Our speed at the distant-signal was about 20 miles an hour. I did not see the light engine, and the collision took me quite unawares while I was standing at the rear side window; I was not hurt. The driver had the brake slightly applied all the way from Sighthill East, and it was applied strongly just before the collision, the gauge in the van running down to zero. There was no rebound in the train, the rear of which did not move at all, but the engine, tender, and front brake-van broke away and ran forward 30 or 40 yards. The trailing wheels of the carriage next the brake-van were the only ones off the rails. The collision occurred at 5.29. After seeing that the other line was not fouled, I went back to Sighthill East cabin, where I saw the signalman; he appeared all right, quite sober, and unaware that anything had gone wrong, till I told him, when he said it was a bad job. The night was fine but dark. The principal injuries were sustained in the front brake-van and carriage next it. I do not think the speed on collision was much reduced, but it was not more than 15 or 20 miles an hour.

8. *John Calder*, signalman; 10½ years' service, 6½ years signalman.—On December 2nd I had been employed only three days in Sighthill East cabin, two days learning and the third day by myself. I had been previously block signalman, in Whifflet south junction, Gartsherry, Coatbridge, &c. I came on duty at 2.0 p.m. to remain till 10.0 p.m. There were two telegraph boys, one learning and the other attending to the speaking telegraph. I work block between Sighthill West and Germiston junction. A passenger train passed the cabin at 5.2 p.m. The Edinburgh goods train had arrived at 4.21 p.m., and at 5.12 p.m. I belled it on to Sighthill West; Sighthill West accepted the signal, putting up the semaphore, and the goods train passed the cabin at 5.14 p.m. At 5.23 p.m. I belled a light engine on to Sighthill West. Sighthill West again accepted the signal and the engine proceeded into the section, for which I lowered the home and starting signals. I did not know whether Sighthill West distant-signal was lowered for this engine. I had received three beats for the goods train and two pause three for the light engine. The next train was the Oban passenger train, for which I received the "Be ready" from Germiston at 5.26 p.m., "On line" at 5.28 p.m., and it passed at 5.28½ p.m. I belled the train on with four beats at 5.26 p.m. and Sighthill gave in reply only one beat merely in acknowledgment. About 5.27 p.m. I repeated the "Be ready," again received one beat, and in about half a minute I received the block, viz., two pause one. This was as the train was passing my distant-signal. I then pulled off my home and advance signals and the train passed at 5.28½ p.m., when I belled it on with two beats, and Sighthill

replied with one beat and raised the arm to danger, he having lowered it when giving the block. Sighthill West afterwards asked on the speaking instrument why the light engine had been sent against the block. There is generally steam hanging about near Sighthill West home-signal.

9. *Robert Barry*, signalman; 6½ years' service.—I was made signalman on November 18th, and was then appointed to Sighthill West cabin. I had learned the duties of signalman while employed as ticket collector at St. Rollox station, where I had been since August 1883. I had passed an examination as block signalman and felt myself quite competent for the duties. I came on duty at 4.0 a.m., to remain till 6.0 p.m. My proper hour to commence was 6.0 a.m., but I had come on for my mate, whose father was dying, two hours sooner than usual. I had never done this before. I was alone in the cabin all day, and was so when the collision occurred. I work block between Sighthill East and Buchanan Street tunnel West. I keep a train register. I remember the Hamilton train which preceded the goods train. I received the "Be ready" for it at 4.59 p.m., "On line" at 5.2 p.m.; it passed at 5.3 p.m., and left the station at 5.5 p.m. The Edinburgh goods train was the next train for which I received the "Be ready," viz., three beats, at 5.12 p.m. I accepted the "Be ready" at once and lowered the block, but I did not receive "Train on line" for the goods train; at 5.23 p.m., I received four pause four, meaning error or amend signal, which I acknowledged with one beat, and then immediately two pause three, the signal for a light engine. I acknowledged this with one beat, and as the block-signal was already given I did not repeat it. Sighthill East then gave two beats for the light engine at 5.24 p.m., upon which I raised the block and gave the "Be ready" to Buchanan Street tunnel West. I had not taken off my signals upon receiving "Be ready" for the goods train, but did so for the light engine after getting "Line clear" from Buchanan Street tunnel West. At 5.26 p.m., two minutes after I had lowered my signals, the goods train and not the light engine passed the cabin and stopped on the platform, van and all, and I was quite unaware that there was anything standing between my cabin and Sighthill East. At 5.25 p.m. I received the "Be ready" for the Oban train. I did not accept it, as the goods train had not cleared the section; but on its being repeated to me I accepted it on its being given the third time after the goods train had passed at 5.26 p.m.; it was immediately given "On line" from Sighthill East, and then came into collision with the light engine; this I did not know of till the station-master came and told me at 5.50 p.m. that there had been a collision. I am quite sure I was not sleepy at the time of receiving the amend signal. I had gone to bed at 8.50 p.m. on Sunday night and slept till 3.35 a.m. on Monday morning. On getting "Train on line" for the light engine, I belled it on to Buchanan Street tunnel West as a light engine, and then on finding it was a goods train I gave the error or amend signal to Buchanan Street tunnel West. (The Buchanan Street tunnel West register book confirms this statement.)

10. *James Paton*, telegraph boy; 2½ years' service, telegraph boy all the time.—I have been rather more than seven months in Sighthill East cabin, where I came on duty on December 2nd at 7.0 a.m. to remain till 6.0 p.m. I was in the cabin when the Edinburgh goods train passed. The goods train was ready to go before the light engine, and Calder gave it on to Sighthill West with three beats. I saw and heard Calder bell the train past our cabin, but I did not observe whether the arm was put to danger; the other boy was coming up the stairs at the time, and I was preparing a message for him to take out. I have no doubt that Calder belled the goods train as it passed the cabin, but I cannot be certain whether Barry put up the signal. If Calder had given the error or amend signal I think I should have been sure to have noticed it, but my attention was engaged taking and sending messages between 5.14 and 5.22.

wrong, and I told him. He asked me if we had got the distant-signal. I said, "Yes." He said, "It has been off this last hour, and I could not make out why it should be so. It is off now." I did not look to see myself. I was then near Parkhead junction. I thought guard Sharp had been at the front of his train when he saw the signal.

John Sharp states: I have been over seven years in the service of the North British Railway Company as goods guard. On the 15th instant I was guard of the 4.40 p.m. goods train from Hamilton to Partick. We were kept standing at the Parkhead junction-advance signal for about 1½ hours after 10 p.m. Guard Johnston came back along the line from Haghill, and I asked him what was the matter. I was then on my engine close to the advance-signal. He told me his train had pitched into a passenger train at Haghill junction. I said nothing more to Johnston, and he went on to Parkhead junction. After he had gone I said to the fireman of my train, "The distant-signal is still standing off." It was quite clear off. I said nothing to Johnston about the signal.

David Johnstone states: I have been about nine months in the service of the City Union, and a signalman since July last. I was with the Caledonian Railway Company as porter and signalman for two years and four months, and with the Glasgow and South-Western Railway Company for 15 months as signalman. I have been working in Haghill junction signal-box since July last. On the 15th instant I came on duty at 5.40 p.m. for 12½ hours. The following are the signals recorded in my book for the running of the 9.45 p.m. down passenger train and the 7.40 up goods train from Parkhead junction:—The 9.45: warned on 9.43 from Garngad; accepted, 9.43; departure, 9.48 from Garngad; arrived, 9.51 at Alexandra Park station; warned on, 9.48 to Bellgrove East; accepted, 9.48 from Bellgrove East; departed, 10.35. The 7.40 goods train: warned on, 9.45 from Parkhead junction; accepted, 9.45; departure, 9.48 from Parkhead junction; arrived, 9.51 at Haghill junction; warned on, 10.33 to Garngad; accepted, 10.33 from Garngad; departed, 10.41. I work block on both branch and main lines. By the regulations I am allowed to accept a train from Parkhead junction when a passenger train is approaching from Garngad. My signals are properly interlocked. I lowered my signals for the passenger train at 9.48; all the signals for the train to run through, after pulling over the locking-bar at the facing-points. My up signals on the Parkhead branch stood at danger. I did not lower them at all for the 7.40 train. I

lowered the home and advance signals for a train at 9.21, but the distant was not lowered for this train. I last lowered the distant-signal at about 7.27 and put it back to danger after this train passed at 7.30. I did not touch the lever at all after that. The first I saw of the goods train was when it was coming through the over-bridge about 400 yards away. At that time the passenger train had not arrived at Alexandra Park station. My branch signals were at danger, but the down passenger line signals were off. I thought the goods train was coming too fast to stop, so I got my hand lamp and turned on the red light and waved it. I cannot say whether the driver saw my lamp or not. He was then a short distance through the bridge. I thought from the noise that the engine was coming quick. I did not hear the brake-whistle sounded until the engine was nearly at the home-signal. I was not then showing the red lamp. I had put my lamp down after waving it two or three times or perhaps more, and had gone back into the cabin to throw up the down distant-signal for the main line. The engine of the goods train was pulling up fast before it came to the home-signal. I threw up the junction signal at the end of the station platform against the passenger train as soon as I had noticed there was danger of the goods train fouling the main line. I daresay the passenger train must have started by that time. I did not throw the advance-signal to danger. I cannot estimate the speed of the goods engine when it passed my cabin. It was going pretty slow. If I had thought it could not stop at the home-signal I would have put my main line signals to danger sooner. I was three times in the Caledonian Railway Company's service, and I left last intending to go abroad. There was an up goods train on the main line at the up advance-signal at the time the collision occurred. I have had complaints about the branch signals; perhaps once or twice. I have several times reported this to the signal-fitter. On Tuesday morning last one of the North British drivers told me that the up distant-signal on the Parkhead branch had not "recovered" properly. I did not do more about this beyond telling my mate, and he said he would report it. He told me when I came on duty on Wednesday that the signal was working properly. I thought that the fitter had seen it. Since the accident my mate told me that it was a platelayer whom he had sent to look at the signal, and he had seen nothing wrong with it. In clear weather I can see the back light of this signal. I did not see the back light at this signal before the accident. I looked for it. About an hour or an hour and a half after the accident I did see it. At that time the lever was at danger in the cabin. The back light was showing a white light. I had not then touched the lever since the collision.

Conclusion.

This collision was due to the driver of the up North British goods train failing to stop his train at the Parkhead branch up home-signal, which was at danger, and running across the main line just as the down Glasgow and South-Western train was crossing the junction.

Apart from the evidence, it is certain from the interlocking that, the signals being off for the down passenger train, the up branch signal levers were locked at danger, but, although the up branch home-signal was showing a danger-signal, the evidence proves conclusively that the up distant-signal was out of order and was showing a white light. The driver of the goods train states that upon coming through the over-bridge on the branch he crossed to the fireman's side of the footplate, and saw the home-signal also off for him, and that it was not until the signal became visible for his side that he became aware that it was at danger. He was then within too short a distance of it to stop before running on to the main line. He was clearly mistaken in thinking that the home-signal was off, for the signalman states positively that it was at danger, and moreover the driver of the down passenger train found the main line down distant-signal off for him, and this being so the up branch home-signal cannot also have been off. The passenger train must have passed the down main line distant-signal about three minutes before the collision, at which time the goods train, which took only a little over three minutes to run from Parkhead junction, cannot have arrived within sight of the Haghill junction up home-signal.

It has been found, however, that the branch up home-signal light is not a good one, and that the light when first seen is very indistinct, not becoming clear until within 250 yards of it. Under these circumstances there is some excuse for the driver mistaking the signal for an all right signal when he first saw it, after having found the distant-signal showing a white light. He is, however, so far to blame, that, after crossing to his fireman's side to look for the signal, he took no further trouble to maintain a view of it, although he knew that his fireman was engaged in firing, and that the signal was not visible from his side, to which he returned, until he was within 100 yards of it. Had he remained on his fireman's side, or put himself in such a position that he could see the signal, he would have realised that it was at danger much sooner than he did, and would also probably have seen the red hand-signal which the signalman states that he exhibited as soon as he thought that the goods train was approaching too quickly, which was soon after it had come through the over-bridge.

The fireman ought to have been looking out for the signals and not firing when approaching the junction.

The signalman did not give his evidence in a very satisfactory manner, and only admitted under pressure that his up branch distant-signal was showing a white back-light, when it ought to have been showing a green back light, when he looked at it some time after the collision, the lever not having been moved in the meantime.

It appears that he had received a complaint as to the working of this signal upon the previous Tuesday, and, although he says that he told his mate about it and thought that it had been put right, he neglected his duty in not making a report of it himself, and I have a strong suspicion that he was uneasy about the condition of the signal, and that this was his real reason for showing the red hand-signal.

He would have shown more intelligence if, when he thought the goods train was approaching too quickly, he had at once put back his main line signals to danger, instead of waiting, as he did, until the passenger train had started from Alexandra Park station platform.

The driver of the Glasgow and South-Western passenger train, who was running at some speed with all signals off for him, was prevented by the abutment of the bridge over the main line from seeing the goods train until he was past the junction points. It was then quite impossible for him to stop his train, and he took the only course which could possibly have averted the collision, by increasing his speed and trying to run clear, which he very nearly succeeding in doing.

The driver and fireman of the North British goods train had, at the time of the collision been on duty, for about six hours. Their regular hours of duty are nearly 13 hours, which are too long.

The signalman had been on duty for a little over four hours.

Had there been the usual safety points upon the branch line (a goods line only) to cover the junction, the collision would have been prevented, and I would recommend the Company at once to add them, to have the branch signals tested and improved, and also to adopt a better system of junction block working, for if the goods train had been allowed to approach only under a caution signal it is probable that the driver would have been more careful to keep a continuous look out for signals.

The Assistant Secretary,
Railway Department, Board of Trade.

I have, &c.,
F. A. MARINDIN,
Major R.E.

APPENDIX.

Locomotive Department,
Kilmarnock, 20th January, 1890.

DAMAGE to GLASGOW and SOUTH-WESTERN RAILWAY COMPANY'S STOCK in collision at HAGHILL JUNCTION,
15th January 1890.

No. 146, first-class carriage.—One end beam broken, side beam damaged, side panels and mouldings damaged, footboard and hangers broken, coupling broken, spring-bracket damaged.

No. 92, third-class carriage.—One end and one side beam broken, five axle-boxes broken, two springs knocked off, three guide-plates damaged. Footboards and hangers broken, gas-gauge and filling-cock damaged, buffer-heads and guide broken, panels and side-lights broken, side-chains damaged, two axles bent.

No. 77, brake third-class carriage.—One end and side beam broken, three guide-plates damaged, three axle-boxes broken, one bearing-spring broken, footboards and hangers broken, guard's projecting seats damaged, panels, side mouldings, and windows damaged and broken, buffer-heads and guide broken and bent, brake-gear damaged and broken, gas-lamps damaged, two axles slightly bent.

J. S. L.

Printed copies of the above report were sent to the Company on the 24th February.

GLASGOW AND SOUTH-WESTERN RAILWAY.

Board of Trade, (Railway Department,)
Whitehall, London, S.W.,

15th March 1890.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 10th instant, the result of my enquiry into the causes of a collision which occurred on the 7th instant, at St. Enoch station, Glasgow, on the Glasgow and South-Western Railway.

In this case the 10 a.m. train from Ayr (consisting of engine and tender, two third-class, one first-class, one composite, one third-class, and two composite carriages, one milk-van and one brake-van), when running into No. 1 platform line at 11.27 a.m., came into collision with engine No. 124, which had just been attached to the empty carriages of the 10.10 a.m. train from Ardrossan in order to pull them out of the station.

The collision was a slight one and no vehicles left the rails.

Three passengers are stated to have been slightly injured, and the two engines and two carriages were slightly damaged. (For particulars, see Appendix.)

Description.

St. Enoch terminus lies nearly east and west, and it is approached from the south upon a sharp curve of 10 chains radius which runs out into a straight line just at the point of collision.

There are six platform lines, all signalled for both arrival and departure.

The leading signals are carried upon a bridge crossing all the lines, and the down home-signals are upon a three armed post 202 yards outside the leading signals.

The top arm of this post (No. 6) is for the main down line leading to No. 1 and No. 2 platform lines, the second arm (No. 9) is for a crossing leading to Nos. 3, 4, 5, and 6 platform lines, on the proper up side of the station, and the bottom arm (No. 5) is a notched arm, used as a caution signal for all the platform lines, being lowered only when the line upon which a train is entering is clear to the buffer-stops.

The signal-cabin, which contains 110 working levers, is on the north side of the railway.

The following distances from the centre of the signal cabin should be noted :—

To home-signals and caution-signal	-	-	-	142 yards east.
„ Clyde junction cabin	-	-	-	305 „ „
„ Outer end of platform	-	-	-	30 „ west.
„ Bridge carrying signals	-	-	-	60 „ „
„ Point of collision	-	-	-	148 „ „
„ East end of station roof	-	-	-	210 „ „
„ Buffer-stop at the end of No. 1 line	-	-	-	339 „ „

Owing to the sharp curve the leading signal for No. 1 platform line cannot be seen from an approaching engine until after it has passed the down home-signal post, and it would be very difficult to distinguish the line upon which an engine at the point of collision was standing until within 80 yards of it.

From Clyde junction into the station the line is nearly level.

Evidence.

William McWhirter states: I have been about five years in the service as signalman. I have been about seven months in St. Enoch station cabin. This cabin contains 110 working levers, and it is worked by two signalmen and a booking-boy. One man is in charge, and the others are under him. The hours of duty are eight hours. We work block to Clyde junction and Saltmarket junction. There are six platform lines in the station, all signalled for entrance and departure, but as a rule trains run into the same dock every day. Trains run into No. 1, 2, 3, 4, and 5, and occasionally into No. 6, but most trains go into No. 1 or No. 2. There is a signal for entering each

dock on the signal bridge, and there is a splitting-signal for the crossing leading from the down line to the docks on the north side of the station. The top arm on this post (No. 6) is for No. 1, and No. 2, docks; the next arm (No. 9) is for the other docks, and the lower arm (No. 5), a notched arm, is a caution signal that applies to all the docks. The order is, that this arm is to be kept at danger when anything is standing upon the line which the train is entering, and is to be lowered only when the line is clear up to the buffer-stop. On the 7th instant I came on duty at 6 a.m. It was a nice clear day, but a little damp. The 10.10 a.m. train from Ardrossan,

due at 11.17, arrived at 11.18, and ran into No. 1 dock. An engine was brought from No. 6 and put on to the tail of this train, to pull it out when empty. That engine was put there about 11.23. The 10 a.m. train from Ayr was warned from Clyde junction at 11.23½, and I accepted it at once. My signals were then at danger, but I lowered at once No. 5, the caution-signal, No. 6, the home-signal, No. 7, the leading-signal for No. 1 line, and No. 4, the distant-signal. No. 2 line was clear, but I meant to send this train into No. 1, forgetting all about the empty train standing there. No. 2 is the usual line for this train to run into. I cannot explain exactly why I sent the train into No. 1. I was working at the other end of the frame, shunting two engines, when the train was indicated. I called out to the boy, "What train is that?" He said, "It is the Ayr train," and I then ran and pulled off the signal for No. 1 road. The two locking-bars for this road were pulled over already. I found out the mistake I had made when the engine had passed the home-signal. I at once threw up all my signals, and ran to try to shift No. 12 points, so as to turn the train into No. 2 line, but it was too late to shift the locking-bar No. 11. I then ran to the window and showed a green flag, and whistled three times. The engine was then about over No. 12 points. I did not get the attention of the men on the engine. The engine was running at the usual speed when it passed my cabin. I would estimate the speed at 20 miles an hour. The driver was on his engine, looking ahead. There was a third man on the engine. They were all talking together. I do not think that the drivers know the signals well. I have seen two of them take the same signal.

Henry Shankland states: I have been over six years in the service, and a signalman for three years and eight months. I came on duty at 7 a.m. on the 7th instant for eight hours. I was working with William McWhirter. I have heard his evidence read over, and it is correct so far as I know, but I did not see a third man on the engine, and I would estimate the speed of the train at about 15 miles an hour. I saw McWhirter throw up the signals before the engine passed the cabin. I did not see the green flag shown from where I was standing, but I heard McWhirter whistling out of the window.

William Hamilton states: I have been 30 years in the service, and over 20 years a driver. On the 7th instant I came on duty at St. Enoch at 6 a.m. till 9 p.m., but would be booked off for two hours from 12.30 to 2.30. I had left duty the previous day at 9.30 p.m. I have a short and a long day alternately. My short day is eight hours. My engine, No. 186, is a six-wheeled engine with trailing and driving wheels coupled, and with a six-wheeled tender. It is fitted with a Westinghouse brake, working blocks on the four coupled engine wheels and the six tender wheels. I took the 7 a.m. train to Ayr. I was then attached to the 10 a.m. express from Ayr, which had ten vehicles to Shields Road, and nine afterwards. It was fitted throughout with the Westinghouse brake, one milk-van having a through pipe only. The brake was in very good order. I used it at all the stops. The last stop was at Shields Road. After that the signals were clear all the way. The signal for No. 1 dock at St. Enoch was off for me. I sighted it soon after passing the home-signal. The caution-signal also was off, so that I expected the line to be clear to the buffers. I ride on the right side of the footplate. Just as I was passing the signal-bridge I saw the funnel of an engine in front of me. At first I thought it was on No. 2 line, but immediately afterwards my fireman gave a shout, saying that No. 1 was full. I was then through under the signal-bridge, and running at my usual speed, 10 or perhaps 12 miles an hour, with steam off. Steam had been shut off half a mile out. I at once applied the continuous brake full power. The rails were a little slippery, and although the brake got well hold at first, the wheels skidded, and I must have been still running

at about a walking pace when I struck the other engine. I hardly felt the shock. I reversed the engine after applying the brake, and then sanded the rails. I did not whistle. I feel sure that if the wheels had not skidded I would have stopped short of the point of collision. This train is put sometimes into No. 1 and sometimes into No. 2 or No. 3 dock, but oftener into No. 2. I did not notice any hand-signal from the signalman as I passed the cabin, nor did I hear him. The rule for running into the station is that I must run at such a speed as to be able to stop at the *proper place* by the application of the hand-brake only. I did not see the signals thrown to danger at all. I am quite certain that the signal for No. 1 dock was off after I passed the signal-cabin and as I was going underneath the signal-bridge.

Robert Thompson states: I have been about seven years in the service, and a fireman for five years. On the 7th instant I was fireman to driver Hamilton. My driver's evidence which I have heard read over is correct.

Robert McAdam states: I have been 19 years in the service, and 10 years a passenger guard. On the 7th instant I came on duty at about 5.10 a.m. at St. Enoch. My regular hours are 12. I took the 5.50 a.m. train to Girvan, and then the 8.50 from Girvan to Glasgow. At Ayr this train was made up of 10 vehicles. The last vehicle was a brake-van, and the next in front was a milk-van. The front carriage was a carriage for Edinburgh, which was put off at Shields Road. The milk-van had a through pipe, and all the others were fitted with the Westinghouse brake. We left Ayr at 10 a.m., the right time, and Shields Road, the last stop, at 11.23, the right time. The distant-signal from St. Enoch was off, but I did not see the others. I had no warning of the collision until I felt the brake go hard on, which was when my van was near the signal-cabin. The train was then running at nine or ten miles an hour. It had reduced speed to three or four miles an hour before the collision took place. It was not a violent collision and there was no rebound. None of my train left the rails. My brake had been put on slightly at Clyde junction. There were a good many passengers in the train. None complained to me of injury, and I did not see any injured ones. The rails were very bad for stopping. My van wheels were skidding after the brake was applied. I did not see a flag shown from the signal-cabin. I was not looking out towards the signal-cabin.

James Hannah states: I have been about 24 years in the service, and a driver over 17 years. On the 7th instant I came on duty at 7.30 a.m. at Greenock, with engine No. 124, a four-wheel coupled engine with leading bogie. It was my engine which was attached to the empty carriages in No. 1 dock at St. Enoch to pull them out, and which was run into. I was coupled on to the carriages, and was waiting for the signal to come out. I saw the incoming signal for No. 1 line lowered, but thought it was for a engine and not for a train. I never dreamt it was for a train until I saw it coming. I saw it first when it was under the signal bridge. I stepped off to signal to the driver. I did not think he would run far enough to strike my engine. The brake was hard on when the collision took place, but I do not know when it was applied. All the wheels were skidding. The speed was three or four miles an hour. I do not think my engine was driven back at all. Both engines were chimney first. My fireman was just stepping off when we were struck. He was not hurt at all. I did not see any hand-signal from the cabin. I did not see the signal on the bridge put to danger. I saw it off, but that was before I saw the train coming. I did not look at the signal after I saw the train.

Robert Sayers states: I am a locomotive inspector, and have been in the service about seven years. I was riding on driver Hamilton's engine from Shields

Road. I can corroborate what driver Hamilton says about the signals. The signal for No. 1 line was not thrown up that I saw. It was certainly off when we passed the cabin and came to the signal bridge. After the collision I went to the cabin and the signalman told me he had made a mistake and forgotten the train, but that he had shown a green flag to the driver.

John Newbury states: I am platform inspector. I was on duty at St. Enoch when the collision took

place. I was on No. 3 platform. As soon as I saw the signal for No. 1 line off, which was before the train came in sight, I ran towards the end of the platform to try to signal to the driver. He was not looking towards me, and I did not get his attention. I did not look towards the signal after I saw the train. I did not see it thrown up to danger. I did not see any signal shown from the cabin. The speed of the train at the time of the collision was between three and four miles an hour.

Conclusion.

This slight collision was caused by a mistake of the signalman in St. Enoch station cabin in sending the 10 a.m. train from Ayr into No. 1 platform line, upon which an empty train was standing, instead of into No. 2 platform line, which was empty.

He admits frankly that he forgot all about the empty train, so that he took off all the signals for the Ayr train to run into No. 1 line, including a caution signal which should not be lowered unless the line is clear all the way to the buffer-stop.

Under these circumstances the driver of the train was justified in thinking that he would not have to stop until he had arrived at a point 190 yards further on than the place where the engine which he struck was standing, and, as, owing to the sharp curve, this engine was not visible until he was within 150 yards of it, and might easily have been supposed to be on another line until he was within 80 yards of it, I do not think he can be blamed for the mishap. He seems to have had his train under control, and to have promptly applied his continuous brake as soon as he saw his danger, and I have no doubt that if the rails had not been greasy, so that the wheels slipped, he would have been able to stop short of the point of collision.

The signalman states that he found out his mistake before the engine passed his cabin, and that he threw up the signals to danger, and showed a green flag from his cabin, at the same time whistling to attract the driver's attention.

In this statement he is corroborated by the assistant signalman who was in the cabin, and he gave his evidence in such a straightforward manner that it is difficult not to believe him.

On the other hand the driver and fireman, and a locomotive inspector who was on the engine, declare positively that they saw no hand-signal from the cabin, and that the signal for No. 1 line was kept off until they were passing the bridge on which it is carried.

Another driver and a platform inspector say that they did not see the signal thrown to danger, but that they did not look at it after the train came in sight.

The weight of the evidence is decidedly against the signalman, who must be mistaken as to the time when he found out his mistake.

If the driver had not passed the cabin when the signal was thrown to danger he might easily have stopped in time, supposing he had at once caught sight of it.

The signalman had at the time of the collision been on duty $5\frac{1}{2}$ hours.

The driver's hours of work are excessive upon alternate days. He is on duty for 13 hours, even when the time he is booked off is deducted, which time of course depends upon his being punctual, and, moreover, the relief due to booking off for intervals is a very different thing to that arising from having shorter hours from the time of commencing to the time of going off duty for good.

The Assistant Secretary,
Railway Department, Board of Trade.

I have, &c.,
F. A. MARINDIN,
Major-General, R.E.

APPENDIX.

Glasgow and South-Western Railway,
Kilmarnock, 14th March 1890.

DAMAGE to ROLLING-STOCK in COLLISION at ST. ENOCH on 7th March.

No. 186 engine.—Two front buffers broken. One buffer between engine and tender broken. Beams bent, and fixings damaged. Buffers between Vacuum-brake pipe damaged.

No. 124 engine.—One front buffer shell cracked. No. 44 composite.—One buffer damaged.

No. 7 first.—One coupling broken.

J. SMELLIE,
Locomotive Superintendent.

Printed copies of the above report were sent to the Company on the 12th April.

GREAT EASTERN RAILWAY.

Board of Trade, (Railway Department,)

8, Richmond Terrace, London, S.W.,

25th February 1890.

SIR,

IN compliance with the instructions contained in your Minute of the 6th instant, I have the honour to report, for the information of the Board of Trade, the result of my enquiry into the circumstances which attended the accident that occurred on the 5th instant, between Arlesford and Wyvenhoe stations, on the Great Eastern Railway.

The engine and two foremost coaches of the 5.17 p.m. train from Clacton left the rails.

One passenger had his thigh broken, seven others were cut, bruised, and shaken, and the engine-driver was slightly shaken.

The train consisted of an eight-wheel tank-engine, which was running with its funnel in front, a third-class carriage with a brake compartment, a composite, two thirds, two composites, and a brake-van at the tail of the train, in which the guard was travelling. The whole train was fitted with the Westinghouse automatic brake, which could be applied from the engine or from the guard's van.

While the train was approaching Wyvenhoe station down an incline of 1 in 70, and running at a speed of about 30 miles an hour, round a 35-chain curve to the right, the engine left the rails and fell over on the right side of the cutting, the leading coach became uncoupled, ran past on the left side of the engine, was turned over, and was completely destroyed; the next coach came to a stand crosswise alongside the engine; the third coach came to a stand with the leading-wheels off the rails, and the off-side trailing-wheel of the fifth coach was also off the rails. The rest of the train remained on the rails, the last vehicle being about 80 feet from where the first mark was found on the top of the near-side rail.

The engine and all the coaches were damaged; 21 chairs and nine sleepers were broken.

The permanent way is substantial and was in good order. It consists of an 80 lbs. rail in cast-iron chairs that weigh 32 lbs. and 40 lbs. each.

The leading and driving wheels of the engine were coupled together, and the four trailing-wheels were in a bogie frame. The engine weighed 44 tons. It appears to have been a well-balanced engine, and in good order.

The accident occurred about 240 yards inside the Wyvenhoe up distant-signal.

Evidence.

Arthur West, engine driver of the 5.17 p.m. train from Clacton to Colchester on the 5th February, stated: I stopped at Arlesford. I left that station at right time, 5.51 p.m. About 100 yards back from where my engine fell over on the side of the cutting I heard a heavy knocking. I thought the driving-spring had shifted and that the crank on the wheel was hitting. I applied the Westinghouse brake at once to the train, and immediately the engine left the rails. It ran over to the off-side and fell over on the side of the cutting. I and my fireman were thrown off. The third-class brake-van which was next my engine broke away and ran forward against the bank of the cutting at the near side of the line, and the composite carriage next to it followed. These were separated from the rest of the train which came to a stand on the rails, the third coach of the train being left alongside the engine. I have been about 13 years in railway service and 20 months a certified driver. I have driven seven months on the Clacton branch. I came on duty at 8.15 a.m., and was off two hours for dinner and two hours for tea. I was a little shaken by the accident. The engine was the first vehicle that left the rails, and the cause of the engine leaving the rails was the breaking of the tyre of the near side leading wheel. I picked up one piece of the tyre about 30 yards back from where the engine lay, and the guard picked up another piece. My engine was an eight-wheel tank-engine, four wheels coupled. It was running funnel in front with the bogie at the trailing end. The train consisted of seven

coaches, all fitted with the Westinghouse brake, which could be worked from the engine or by the guard in the rear. The engine was also fitted with the Westinghouse brake. I was running at the time of the accident at a speed of about 30 miles an hour down a falling incline of 1 in 70. I had run a mile with steam shut off when the accident happened. I put no brake on the train until I heard the knocking. I fired to the regular driver from 8 a.m. till 3.32 p.m., and took charge to drive the outgoing train at 5.17 p.m. The regular driver examined the engine before he left, while I was oiling. Three men work this engine and train—the driver, myself, and a fireman. The driver makes two trips from Clacton to Colchester and back one day and three trips the next day. The train runs three trips a day. I fire two trips and drive the third trip one day and fire two trips the next day, going off duty at 5 p.m. About half the tyre broke into three pieces and left the wheel.

William Briggs stated: I drive the train from Clacton to Colchester, and was relieved on the day of the accident at 5 p.m. by driver West. I had examined the engine before handing it over to driver West. I believed it to be in good order. I had found nothing wrong with it. It is the engine that I work daily.

James Patrick stated: I was fireman of the 5.17 p.m. train from Clacton on the 5th February. I heard a very heavy knocking about 80 or 100 yards before the

engine left the rails. I thought the big end was striking the spring, and that the latter had shifted. The driver applied the Westinghouse brake as soon as he heard the knocking. The train was running at a speed of about 30 miles an hour at the time. The engine left the rails, and fell over on to the bank of the cutting at the right side of the railway. I came on-duty at 5 p.m. that day to fire the engine. I have been five years in railway service, and 18 months a relieving fireman.

Henry Starting stated: I was guard of the 5.17 p.m. train from Clacton on the 5th February. The train stopped at Arlesford and left at the proper time, 5.51 p.m. It was due at Wyvenhoe, $1\frac{1}{2}$ miles distant, at 5.55 p.m. I did not know anything was wrong until the continuous brake was applied about 240 yards inside the Wyvenhoe distant-signal, and my train was stopped in about 82 yards. The Wyvenhoe distant-signal was at all right as I passed. My train consisted of a tank-engine, a third-class with a brake compartment, a composite, two thirds, two composites, and a brake-van, in which I rode. The train was fitted with the Westinghouse brake, which could be worked from the engine, or from my van. I think the train was running down an incline of 1 in 70, at a speed of about 30 miles an hour at the time of the accident. I have been 19 years in railway service, 17 years a guard. I picked up a piece of the broken engine tyre after the accident. It was lying at the near side of the sixth coach of the train. I was not hurt. I got out and attended to some six or eight passengers that complained of being hurt. They had been travelling in the two coaches next the engine.

Ambrose Leathers stated: I am in the engineer's department, and assistant to the engineer of this

district of the Great Eastern Railway. I was travelling in the sixth coach of the 5.17 p.m. passenger train from Clacton on 5th February. I got out as soon as the train stopped after the accident to see what was the matter. As soon as I opened the door of my carriage I saw a piece of the engine tyre lying on the gravel. I attended to the passengers and then went back to examine the railway. I found the several marks on the rails, and chairs, and sleepers, which I have recorded on the sketch handed in. I came to the conclusion that the breaking of the tyre of the left side leading wheel of the engine had caused the accident. I have been 10 years on railway works. 32 chairs and nine sleepers were broken, and two iron and one steel rail were bent. The rails weigh 80 lbs. to the yard. The chairs that carry the steel rails weigh 43 lbs. each, and the others about 32 lbs. each. It is a cross-sleeper road. There are 11 rectangular sleepers to a 30 ft. rail. The rails are fished.

Samuel Dawson stated: I am a platelayer and went to the scene of the accident about 8.30 p.m. on the 5th instant. I picked up a piece of the engine tyre at the left or near side of the train opposite the third coach. I placed it alongside the two other pieces that had previously been picked up.

Herbert Smith stated: I am a platelayer in the Great Eastern Company's service. I work at Arlesford. I am doing ganger's work, as the ganger is laid up. When I was walking my length, about 6.10 a.m. on the 6th instant, I found a brake-block broken in two about half a mile at the Clacton side of Arlesford. I took it to Arlesford and left it on the platform. I understand it was sent to Stratford and was found to be the brake-block of the engine that left the rails on the 5th instant.

Conclusion.

This accident appears to have been caused by the breaking of the tyre of the left or near side leading wheel of the engine.

After the accident three pieces which formed half the tyre were picked up at the near side of the line. The fractured surfaces showed no flaw. It was a steel tyre made by the Bolton Iron and Steel Company, and was put on at Stratford works in December 1882. After running 130,798 miles it was turned up at Stratford works in October 1889, and has run 5,910 miles since then.

It was fastened to the wheel frame by eight one-inch stud bolts.

On the morning after the accident one of the platelayers, when walking on the railway, found a brake-block about half a mile on the Clacton side of Arlesford station.

This brake-block was broken off the brake-gear at the near-side leading wheel of the engine by a blow from the tyre. The tyre had broken, about half-way between one of the stud bolts and the counterpoise weight on the wheel frame of the leading wheel.

The fractured edge of the tyre had struck and marked the brake-block. This was not noticed until half the tyre came off in three pieces, in consequence of seven of the stud bolts being shorn off while the engine was travelling towards Wyvenhoe. The tyre was $1\frac{3}{4}$ inches thick. The Great Eastern Railway Company now fix their tyres in such a manner that they do not leave the wheels if they break.

The Company's servants in charge of the train appear to have been alert and to have done their duty, and the engine was stopped about 80 yards from where the first mark was found on the top of the near-side rail, where the near-side leading wheel crossed the near-side rail.

The Assistant Secretary,
Railway Department, Board of Trade.

I have, &c.,
F. H. RICH,
Colonel, R.E.

Printed copies of the report were sent to the Company on the 14th March.

GREAT NORTHERN RAILWAY.

Board of Trade, (Railway Department,)
Whitehall, London, S.W.,
27th January 1890.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 7th instant, the result of my enquiry into the causes of a collision which occurred on the 2nd instant, at Colwick station, on the Great Northern Railway.

In this case the 9.55 p.m. up Great Northern passenger train from Nottingham (consisting of engine and tender, composite brake-carriage, four composite carriages, and brake-van, all fitted with the automatic vacuum-brake), when approaching Colwick station at about 10.2 p.m., came into collision with the rear of the 9.38 London and North-Western express goods train from Nottingham to Northampton (consisting of engine and tender, 16 waggons, loaded and empty, and rear brake-van), which had started from the London and North-Western goods yard at Nottingham at 9.38, and, having been kept standing at Colwick station up home-signal for about five minutes, had started when this signal was lowered for the passenger train, and had run forward for about 100 yards, when the collision occurred.

No vehicle in the passenger train, which ran forward for about 30 yards after striking the goods train, left the rails, and the damages were trifling; but the goods train brake-van was upset on to the down line and broken up, a parcels van and two waggons were upset on the up side of the line and broken up, and two other waggons left the rails, and were slightly damaged.

Five passengers complained of slight injuries, the London and North-Western goods guard was seriously hurt, and the driver, fireman, and guard of the Great Northern train were slightly hurt.

In the passenger train the step-boards of the two front vehicles were damaged, one buffer-casting and one quarter-light were broken, and the bodies of three of the carriages were slightly shifted.

In the permanent-way 12 chairs were broken.

Description.

The station signal-box at Colwick is at the west end of the station, and it is 285 yards west of Colwick west junction signal box, and 1 mile 419 yards east of the Hall signal-box, the two adjacent block signal-boxes.

Colwick up home-signals are upon a two-armed bracket-post upon the up side of the line, 220 yards west of the box, and Colwick up distant-signals are upon two posts on the west side of the line, 730 yards west of the box.

There is a good view of all these signals. Colwick down starting-signal is 300 yards, and the point of collision was about 260 yards west of the box, and a tail-light at the point of collision should be seen upon a clear night from an approaching engine upon the up line for at least 250 yards.

The line falls from the west upon a gradient of 1 in 445 to near the up home-signals, and then rises upon a gradient of 1 in 1,284 towards the station. The line is upon an easy curve to the south.

Absolute block working is in force.

Evidence.

Driver *John Singleton* states: I have been in the service over 30 years, and have been passed driver over 20 years. I came on duty on the 2nd instant at 3.30 p.m. I live at Grantham. I worked first the 3.30 p.m. train from Grantham to Nottingham, then the 6.15 p.m. from Nottingham to Grantham, returning from Grantham at 7.38 p.m. for Nottingham. I then left Nottingham at 9.55 p.m. with the train due to leave there at that time for Grantham. The train consisted of six vehicles, with one guard. My engine, No. 699, is a six-wheeled engine with driving and leading wheels coupled. It is fitted with the automatic brake, and the train was also so fitted throughout. The brake was in good order. I tested it before starting from Nottingham. There was one

guard with the train, and he rode in the rear vehicle. We left Nottingham at right time. There was a bit of ground fog, but we could see the signals well. All the signals were off for us right through to and including the Colwick station box distant and home signals. I was looking out when approaching Colwick. I had my head outside the weather-board on the right-hand side, on account of the ground fog. Before passing the down advanced starting-signal, which is on the up side of the line, I noticed three red lights in front of us. As near as I can say, owing to the fog, the red lights would be about 20 yards in front of me. They appeared to me to be just moving forward. At that time the Colwick home-signal was off, and the distant also was off when I passed it. Directly I saw

the red lights I put on my brake full power. It took effect at once, but the distance was too short to prevent a collision. I shut off steam before passing the distant-signal, the train being booked to stop at Colwick. I should put my speed when I first saw the red lights at something like 20 miles an hour. We had certainly reduced speed when my engine struck the train in front. I think we were running at about 15 miles an hour when the collision took place. The brake-van of the London and North-Western train was taken off its wheels and thrown over across the down line; the parcels van and two waggons in front of it were turned over on the left side of the up line. After striking the London and North-Western brake-van we travelled perhaps 25 or 30 yards before coming to stand. When we did stop there was a pair of wagon wheels under my engine. In my opinion the London and North-Western train was just starting when my engine struck it. My right thigh was slightly bruised in the collision, but I was not otherwise hurt. One of my fireman's hands was bruised, and the other burnt by coming into contact with the fire-box. I got off my engine, ran to the front, and saw that there were a pair of wagon wheels under it. I then looked round the foot plate, and it was not until that time that the home-signal of the Colwick station box was put from all-right to danger. I saw the signal changed. I then left the foot-plate and went back to my train to help the passengers, or do anything that might be necessary. The passengers appeared to be all right, and they walked away towards the station. They were told that a train would be made up there to take them forward to Grantham. No complaint was made to me by any passenger, and I saw no one suffering from any personal injury. The front vehicles had the step-boards broken. I did not see any other damage to the train. The brake-gear was all right. I did not see the London and North-Western guard until after I had finished with our train. He was then being removed to the doctor's; he was being carried. I was certainly on the look-out in front approaching Colwick, and I believe I saw the tail-lights of the London and North-Western train as soon as it was possible to see them. I was prevented from seeing them earlier by the curve and the ground fog. When I did see them they were giving a good light. I think I was about 15 yards from the down starting-signal when I first saw the three red tail-lights. My brake was then not on at all. I had tried my brake at the distant-signal. After I came to a stand I could see the lights in Colwick signal-box.

Fireman *Atkinson* states: I have been in the service 8½ years, and have been a fireman three years. I commenced duty on the 2nd instant at the same time as driver Singleton. We left Nottingham at 9.55 p.m. (right time) with six vehicles on. I saw the distant and home signals of the Colwick station box off; they were off when we first sighted them. I saw the distant-signal off when we were 40 yards away from it, and I saw the home-signal off when we were rather further from it than that. There was a ground fog, but we could see the signals above the fog. Just before approaching the distant-signal, but after that we saw that it was off, my driver shut off steam and just applied the brake to try it. After seeing the home-signal at Colwick off I saw red lights in front of us. I turned to my mate to tell him but found that he had already put the brake on full power, and almost immediately afterwards we struck a train in front of us. As near as I could say we were going about 20 miles an hour when we first saw the red lights. The brake took effect quickly when my mate applied it. I should say we struck the London and North-Western train at about 15 miles an hour. The distance was too short to do more than to reduce to that speed. The curve and ground fog prevented us from seeing the red lights sooner. I remained on the footplate while my driver went to attend to the train. The fog was not such as to warrant the services of fogmen. I am almost certain

that we can see the home-signal of the Colwick station box from the distant-signal. I did not notice what was the position of our engine in relation to Colwick down advance-signal when we first saw the red tail-lights.

Passenger brakesman *Lilleyman Topham* states: I have been in the Great Northern Company's service about 10 years. I have been a passenger brakesman a little more than four years; the last two years in the Grantham district. It is part of my duty to work passenger trains between Nottingham and Grantham. I commenced duty on the 2nd instant at 7.10 p.m. I was booked to work the 7.38 passenger train from Grantham to Nottingham, and the 9.55 p.m. train, Nottingham to Grantham. My up train, 9.55 p.m. from Nottingham, was at the platform, and I took charge of it at 9.25. I assisted to bring the parcels from the office to the train, the parcels staff being short handed. The train was formed as under: Engine, No. 699, driver J. Singleton; carriage-brake; four composite carriages, and break-van. The train was fitted throughout with the automatic vacuum-brake. I rode in the last vehicle. We left Nottingham right time. There were, I think, about 30 passengers in the train, spread over the train. I think there were as many in the front as in the rear. It was rather misty, but there was not any difficulty in seeing the signals. I did not see the distant-signal of the Hall box, but before we reached that box I looked out, opening the window to do so. I saw the home-signal about 100 yards before we passed it; it was off. I did not hear the driver whistle for the distant-signal. After I saw the Hall home-signal I closed the window and set about sorting the parcels. We were booked to stop at all stations except two, Elton and Sedgbrook. I did not see the distant-signal worked from the Colwick station box. I was not looking for it. I was in the act of picking up a parcel when the collision took place. I was thrown down and stunned for a few seconds, but I pulled myself together as quickly as I could. The light of my hand-lamp was knocked out, and my hands were hurt, so that I could not relight the lamp. I think I fell on my hands. I asked a person to light the lamp for me, and he did so. I think he is connected with the company at Colwick, but I do not know him, and he was not in uniform. I got out of the van. The passengers were getting out of the train, and some of them had got out. I found we had run into a London and North-Western goods train. I was not in a condition to examine my train, but Inspector Healey did so. I did not receive any complaint from any of the passengers. I am not aware that any passenger received injury. The steps of the two front vehicles were broken, and there was a quarter-light broken in the guard's compartment of the first vehicle. I did not hear the driver whistle for the brakes or for signals when approaching Colwick. I received a cut near the left eye, and my hands are still numbed. I should think that a red tail-lamp should have been seen that night for a distance of 100 yards.

Signalman *William Kitchen* states: I have been in the service about seven years, and a signalman two years and a half. I have been at the Hall signal box about six months. I am on night duty this week. I left duty on the 2nd instant at 6 o'clock a.m. I went home to breakfast, and rested until about half past nine. I then went out for a walk and returned about a quarter to one. I went straight to bed, got up about a quarter to five, and came on duty at 6.0 p.m. I had nothing to drink during the time I was out for a walk. It was rather foggy, and it was not possible to see the signals very far. I should think they were visible for about 70 yards. There was also difficulty in seeing the tail-lights of the trains, excepting just as they were passing the box. I put fog-signals on the line when my signal was at danger, both for up and down trains. I began to do this when I went on duty, and I continued doing it, when necessary, until

the collision took place. The 9.25 p.m. train from Nottingham to Pinxton passed my box at 9.29, having been properly signalled from Trent Lane. I gave "Train out of section" at 9.29 to Trent Lane, and "Train on line" to Colwick station box at the same time. I received "Train out of section" from Colwick box at 9.31. At 9.29 I received "Be ready" from Trent Lane for a goods train after I gave "Train out of section" for the passenger train. I accepted it, and at 9.36 I received "Train on line," and passed it on. My signals were off for the train, and it passed my box at 9.40. I had received "Line clear" from Colwick at 9.37, and when the train passed at 9.40 I sent "Train on line" to Colwick, and received "Train out of section" from Colwick at 9.44. As the train passed my box I saw that it was a tranship train from Nottingham to Colwick, and I entered it accordingly. The signal entries were made at the time I received and forwarded them. I next received from Trent Lane "Be ready" for a London and North-Western goods train at 9.40. I accepted the train at 9.40, and at once received "Train on line." My distant-signal was against this train. I received "Train out of section" from Colwick for the previous train at 9.44. My home-signal was off before the train passed my box at 9.46. I offered this train to Colwick station box at 9.44, when I received "Train out of section" for the previous train, and it was accepted at that time. I sent "Train on line" to Colwick at 9.46; the signal was properly acknowledged, and I received "Train out of section" from Colwick at 9.48. The next signal was "Be ready" from Trent Lane junction at 9.54, which I accepted, and at 9.58 I received "Train on line" for the 9.55 p.m. passenger train from Nottingham. Directly I received the "Be ready" from Trent Lane I sent it forward to Colwick station, and it was accepted. I therefore pulled off my distant, home, and starting signals for the train to pass, and it did pass at 9.59, at which time I gave "Train on line" to Colwick, and "Train out of section" to Trent Lane. When I gave "Train out of section" to Trent Lane he offered me "Be ready," which I accepted, and "Train on line" for an engine, which arrived at my box at 10.2 and remained there, owing to the collision, until 11.18. The whole of the entries up to the "Train on line" signal to Colwick at 9.59 were made at the time I received or forwarded them. I made no entry after the collision, excepting those for the engine which followed the passenger train and arrived at 10.2. I received at 9.31 from Colwick, on the down instrument, "Be ready" for a light engine. This was cancelled about five minutes afterwards. The next down signal I received was "Be ready" at 9.50, which I accepted, and at 9.57 I received "Train on line" for No. 142 passenger train, which passed my box at 9.59, at which time I gave "Train out of section" to Colwick, and "Train on line" to Trent Lane. At 9.59 I received "Be ready" from Colwick for a passenger train. I accepted it, but the train never came. It was cancelled at 10.44 owing to the collision. About 10.2 p.m. the signalman at Colwick station box called me up on the speaking instrument, and said: "You have let the passenger train into the London and North-Western goods." I asked him what he meant, and he repeated the message. I did not reply further. I am a single man, and lodge in Davidson's Row, near Trent Lane box. When I am on night duty the noise there is so great during the day that I prefer to sleep at a friend's, who lives in Pym Street. I sleep there sometimes three or four times a week. I do not lodge there regularly, because it would be too far for me to get to my duties in the morning. I only use my friend's place when I am on night duty. I slept there yesterday. Before being appointed signalman I was telegraph lad at Hammerton Street, Harringay, and King's Cross west. It is correct that I made application to be absent from duty last night, and it was declined because I could not be relieved. I had been invited

to go to a wedding. I made no trouble about it. I went to the church in Nottingham where the wedding took place—about five minutes walk from where I slept—and returned straight from the church (St. Matthias) to the house. I came down from my box, intending to put fog-signals on the line for the London and North-Western goods train, and had got one fog-signal on when I heard the Colwick bell ring. I feel certain it was the Colwick bell, and I returned to my box, took "Train out of section," and pulled off my home-signal. The train had already passed the distant-signal. I could see the head-lights of the London and North-Western engine about 200 yards away. My clock was quite right. My signals checked the tranship train and the London and North-Western train, but were clear for the passenger train. I think I have made a mistake in saying that I sleep as often as three or four times a week in Pym Street.

Relief signalman *William Houghton* states: I have been in the Great Northern Company's service for 15 years, and have been signalman over 14 years. I have been relief signalman over four years. I am stationed at Peterborough, and came to Colwick station box on Tuesday. I am fully acquainted with the duties of this box, although I had not taken charge of it previously. It is an ordinary block box, and there is nothing in the least exceptional in the working. I took charge at the box on Tuesday at 6.0 p.m., and again on Wednesday, and again last night, the 2nd instant, at the same time. I went to bed on the 2nd instant a little after eleven, and was called up a few minutes before 5.0 p.m. I had tea, and then came to the station to see the station-master, to ask whether he had received any orders for me for the next day. I then came on duty in the box at 6.0 p.m. It was rather foggy when I went on at 6 o'clock, but it cleared up about half-past seven. There was a ground fog, but not enough to require the fog men out. I could see my down advance-signal distinctly. My advance starting-signal is about 300 yards from the box. At 9.24 p.m. I received "Be ready" from the Hall box for an up passenger train, which I accepted, the line being clear beyond my box, and at 9.29 I received "Train on line." The train passed my box at 9.31, at which time I gave "Train out of section" to the Hall box, and "Train on line" to Colwick west, and at 9.32 I received "Train out of section" from Colwick west. At 9.36 the Hall box offered "Be ready" for an up goods, which I accepted at 9.36. I received "Train on line" at 9.45, and the train passed me at 9.48. I had offered "Be ready" for this train to Colwick west at 9.36, and it was accepted at that time. When it passed my box at 9.48 I gave "Train out of section" to the Hall box, and "Train on line" to Colwick west. I received "Train out of section" from Colwick west at 9.49. At 9.31 I received "Be ready," and at 9.35 "On line" from Colwick west for a light engine which I believed to be for Nottingham, and which I therefore sent forward to the Hall box. When the engine arrived I found it had to be crossed over for Colwick yard, and having accepted an up train I put the engine into the siding and kept it there until after the passing of the goods train at 9.48. I crossed it at 9.49, and I signalled it on to the west box, at that time receiving "Train out of section" from the west box at 9.52. On finding that the light engine was for Colwick yard, I cancelled at 9.38 the "Be ready" previously sent to the Hall box. After crossing the engine, the next signal which I received for an up train was "Be ready" at 9.55 for the passenger train. I accepted it, and offered it at 9.55 to Colwick west, which he did not then accept. At 9.59 I received "Train on line" from the Hall box for this passenger train. Colwick west accepted the train at the same time, and pulled off his indicator. I then pulled off my distant and home signals. As soon as I pulled off my up signals for the passenger train, I went to my down signals, having a down passenger train to deal with at the same time. I had

accepted the down train at 9.56, received "Train on line" for it at 9.59, and the Hall box accepted it at 9.59. I pulled off my signals for that train to pass. Therefore at 9.59 my up signals and down signals were both off for passenger trains. Just after I had booked the signals I heard a noise. It did not occur to me at first that it was a "pitch in," but I knew there was something wrong. I thought something had left the road. I at once threw up my up signals, and then my down, and I took my hand-lamp, put a red light on, and ran down the steps to meet the down train. I knew from the noise that the accident, whatever it was, was to the up train, and I anticipated that the down road might be blocked. The driver of the down train was just starting from the platform when I threw up my signals and stopped him. There was nothing in the working of the Hall signalman to attract my attention. I have seen the Hall box block-book, and I see that there is a train missed. I state emphatically that every signal which I received and forwarded was entered in my block-book at the time I received or forwarded it. After receiving the "Be ready" from the Hall box at 9.36 for the goods train, and accepting it at that time, I received no signal from the Hall box signalman for an up train until 9.45. The "Train on line" signal shown in the Hall box as having been sent to me at 9.40, and the "Train out of section" said to have been given by me to the Hall box at 9.44, were not received or forwarded by me. As already stated, after accepting the goods train at 9.36, I did not receive any signal for up trains until "Train on line" at 9.45. Directly after the collision, while I was outside the box, not having returned to it after going out to stop the down passenger train, I heard someone call out from the direction of the noise that someone has run into us. I called out, "I did not know that you were there." Directly afterwards the station-master came running down, and I repeated what I had heard. I was able by that time to see that the train in question, which had been run into, was the London and North-Western goods. He went down to the accident and I returned to the box. I then called up the Hall box man, and told him both lines were blocked. I do not recollect whether I said anything else to him. I told them on the speaking instruments that both lines were blocked. I did not give the "Obstruction of line" signal on the bells. My up line was already blocked by the accident to the passenger train. I cannot account for not seeing the head-lights of the London and North-Western train, and why I was not looking out in that direction. I had not the least idea that the train was there. I could have seen the head-lights if I had looked, but I might not have known that they were the head-lights of an up train. My signals were on against the goods train, which passed me afterwards, but I cannot say whether it stopped or not. I heard no whistling from the engine of the London and North-Western train.

Inspector *Little*, London and North-Western Company's, states: I was on the scene of the accident at 10.40. At that time the guard had been taken to the doctor's. When I arrived there no change had been made in anything, excepting that the passengers and parcels had all been removed from the passenger train. The London and North-Western Company's locomotive foreman Evans told me that he had been informed by the driver of our goods train that he had been stopped at the Colwick home-signal five or six minutes, and that during this detention he had whistled twice; that he started when the signal was pulled off, and had gone forward about the length of his train when he was run into by the Great Northern passenger train. Particulars of damage to London and North-Western train are as follows: Brake-van 532, broken up; parcels van 17, broken up; low-sided wagon 31,787, broken up; box-wagon 13,816, broken up; two other waggons, 14,407 and 45,178, off road

and slightly damaged, but sent forward both for Board Street. The guard of the London and North-Western goods train books in his journal, "Left Nottingham" 9.38 p.m., two minutes signals Trent Lane Junction, "two minutes Hall, and two minutes approaching Colwick station." The train is due to leave Nottingham at 9.38 p.m. The guard told me, when I called upon him at the doctor's, that his last recollection was, standing at the Colwick signals looking out of his door on the 6-ft. side, watching a passenger train passing towards Nottingham. He was not aware of the passenger train approaching behind his train. He was watching the other train at the time. I should mention that when I arrived on the ground a tail-light could be seen for 350 or 400 yards.

George Gillings states: I have been about 16 years in the service of the London and North-Western Railway Company, and about seven years a driver. On the 2nd instant I came on duty at 7.30 p.m. at Colwick. I ran light to Nottingham, and was then attached to the 9.38 p.m. London and North-Western express goods at Nottingham. I had 17 waggons, loaded and empty, and a brake-van in rear. We started at 9.38 from the North-Western goods yards, and we were delayed for about two minutes at Trent Lane junction. The distant and home signals at the Hall were at danger, and I came to a stand at the home-signal. The signal was lowered as soon as I had come to a stand, and I proceeded. The Colwick distant-signal was at danger, and so was the home-signal, which I sighted when perhaps about 200 yards from it. I came to a stand at the home signal, with the engine close up to it. I whistled when about half-way between the distant and home signals; again as soon as I came up to the home-signal; and again just before the signal was lowered, which was after I had been standing for about four minutes. I started, and had run for about 40 or 50 yards, when I felt a shock which threw me and my fireman into the tender. We were not hurt. I pulled up at once, when my engine was close to the station signal box. After speaking to the signalman I went back to the rear of my train. The brake-van, and a parcels van in front of it, and about five waggons, were off and detached from the train. The two rear vehicles were broken up and upset. The brake-van being across the down road, and the parcels van on the outside of the line. None of the waggons were foul of the down road; at least, I think not. The guard was badly cut about the head and face. He had been got out of his van before I got there. It was a bit foggy, but it was easy enough to see the signals. It seemed a pretty general mist, and not more below than above. I could see the lights in the signal box plainly before I started from the home-signal, and I could see the lights in my guard's-van quite clearly. I cannot speak as to the condition of the tail-lights on my train. I had the proper head-lights—two white lights—burning. I think they would have been seen from the signal-box. Before I went back I said to the signalman, "There is something run into us behind, and I am going back to see how my guard is." He asked what it was, and I said I could not tell him. When I came back I told him what train it was,—And he then told me that he had not had the "Be ready" or "On line" signals for my train from the Hall box. The signal man appeared to be quite fit for duty.

Arthur Fuller states: I have been 10 years in the service of the London and North-Western Railway Company, and a fireman for eight years and nine months. I have heard my driver's evidence read over, and it is correct. I think that the Colwick home-signal was visible for nearly the whole way from the distant-signal.

Joseph Varham states: I have been 19 or 20 years in the service of the Great Northern Railway Company, and a goods guard for five years. On the 3rd January I came on duty at 7.50 a.m. at Boston,

and left duty at 10.25 p.m. at Colwick, where I live. At 9.35 p.m. I left Great Northern goods yard, Nottingham, as guard of a special goods train for Colwick yard, consisting of 17 waggons, loaded with goods and minerals, and a brake-van. We were stopped at Trent Lane junction by signals, and checked at the Hall, but not quite stopped. We were stopped dead at Colwick station home-signal, and stood for two minutes. We were checked at Colwick west, but the

signal was lowered before we got to it. I think the speed of our train between Colwick station home-signal and Colwick west was not more than a walking speed. I did not book the time of passing either of these boxes. We arrived in Colwick sidings at 9.52. That is the time we arrived at Colwick north box. It was a bit foggy, but I could see a ground-light for more than the length of my train.

Conclusion.

This collision was due to a failure of the block-working between the Hall signal-box and Colwick station signal-box, whereby one of two goods trains was missed, and the second one of the two was kept standing at Colwick station up home-signal, unknown to the Colwick signalman, until that signal was lowered for the passenger train, which had been properly signalled forward from the Hall box and accepted from the Colwick box. There are only two ways in which this condition of things could have arisen: either the Hall signalman must have omitted to send forward any block-signal for one of the goods trains, and have allowed it to proceed without any permission from the Colwick signalman, or the latter signalman, having given permission for both the goods trains to approach, must have forgotten one of them, and have omitted to make any record of the signals referring to it in his book.

The first goods train actually passed the Hall signal box at 9.40, was kept standing for a minute or two at Colwick up home-signals, passed Colwick box at 9.48, and arrived at Colwick west box at 9.50.

The second goods train passed the Hall signal-box at 9.46, was brought to a stand at Colwick up home-signals, stood there for over five minutes, and had just started when it was run into by the passenger train, for which the signal had been lowered.

The passenger train passed the Hall signal-box at 9.59, and overtook the London and North-Western goods train at about 10.2.

At the Hall signal-box the signals entered for the first goods train are as follows: "Be ready offered, and line clear given from station ahead"—9.37. "Train sent on to station ahead"—9.40. "Train out of section received from station ahead"—9.44: and for the second goods train the similar times entered are 9.44, 9.46, and 9.48 respectively.

At the Colwick signal-box the signals are entered for one goods train only, and they are as follows: "Be ready accepted from, and line clear given to station in rear"—9.36. "Train on line received from station in rear"—9.45.

Both the signal record books have been carefully kept, and there are no erasures; both the signalmen have good characters, and both are positive that they made no mistake.

Under these circumstances it is quite impossible to state with certainty which of the men is in fault, but it cannot be forgotten that if the Colwick signalman be the one, his error was one of forgetfulness and omission to record the signals received; while, if it be the Hall signalman, he must have committed the far more serious offence of concocting a plausible series of false entries in order to screen himself and to throw the blame upon the other man.

These entries, however, when compared with those at Colwick station and Colwick west, are in some respects a little suspicious, for, if correct, they would make it appear that the first goods train took six minutes to run the 285 yards from Colwick station box to Colwick west box, and that the London and North-Western goods train was cleared from Colwick station box only two minutes after it passed the Hall box, although it had been brought to a stand at the Hall box up home-signal, and had 1 mile 419 yards to run. Moreover, it would be difficult to account for the fact that, although according to the entry in the Hall signal-box, the first goods train had been cleared from Colwick station box at 9.44, the London and North-Western goods train which did not pass the Hall box until 9.46, was brought to a stand at the Hall box up home-signal.

It seems to me, therefore, that the facts of the case are rather in favour of the Colwick signalman, although, as I have stated above, it is impossible to arrive at any positive conclusion on this point. However this may be, the signalman at Colwick was decidedly remiss in the performance of his duty in neglecting to look along the line before accepting the passenger train. Had he done so he could not have failed to see the head-lights of the London and North-Western engine which were full in view only 220 yards away, and, according to the evidence of the London and North-Western

driver, the whistle of this engine had been sounded at least twice within the hearing of the Colwick signalman. It is unfortunately not at all an uncommon thing for signalmen to omit this part of their duty, but in a small signal-box like Colwick, and at a time when there is not much going on, there is no excuse for it.

It may be thought that the driver of the passenger train should have seen the tail-lights of the London and North-Western train at a sufficient distance off to have been able to stop his train, fitted as it was with a continuous brake, but there was evidently a considerable amount of mist and ground fog, and it may be that it was thicker than usual just at the time he was approaching. There can be no doubt, judging from the result of the collision, and indeed from his own evidence, that he actually did see them, and applied his brake further off than he thinks he did. Accidents of this class used to be rather common, but have recently been somewhat rare, and they can only be prevented by a system of interlocking between the block instruments and out-of-door signals. Both the signalmen had, at the time of the accident, been on duty for four hours, having been off duty for 12 hours previously.

I have, &c.,

Assistant Secretary,
Railway Department, Board of Trade.

(Signed) F. A. MARINDIN,
Major, R.E.

Printed copies of the above report were sent to the Great Northern and London and North-Western Railway Companies on the 24th February.

LONDON AND SOUTH-WESTERN RAILWAY.

Board of Trade, (Railway Department),
London, S.W., 29th January 1890.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 21st instant, the result of my inquiry into the causes of a collision which occurred on the 20th instant at Bournemouth West station on the London and South-Western Railway.

In this case the 2.38 p.m. down train from Brockenhurst (consisting of tank-engine running bunker first, brake-van, two third-class, one second-class, and two first-class carriages, brake-van and carriage truck) on running into No. 2 platform line at 3.35 p.m. came into collision with a train of eight carriages, with a saloon carriage behind it, standing against the buffer-stop.

None of the vehicles of the passenger train left the rails or were much damaged, but the empty saloon carriage was driven over the buffer-stops; the next carriage in front of it had one pair of wheels on the buffer-stop, and the front carriage in the empty train was badly damaged and had one pair of wheels off the rails.

There were only four passengers in the train, and all of them and the guard of the train were injured, but not seriously.

A shunter who was on the line between the empty carriages was also hurt.

A return of the damages to the rolling stock is appended.

Description.

Bournemouth West is a terminal station with six platform lines, all capable of being used for arrival or departure of trains, and three platforms.

The line leading into the station is straight, or very nearly so, and it falls towards the station from Bournemouth West junction, about a mile off, upon gradients of 1 in 196, and 1 in 101, to the signal-box, and then 1 in 90 for 200 yards to the outer end of the platform, whence it is level to the buffer-stops.

The distance from the outer end of the platform alongside No. 2 line to the point of collision is 110 yards, and to the buffer-stops is 212 yards.

The following are extracts from the instructions issued to drivers regarding the use of continuous-brakes:—

“13. In approaching terminal stations, or stations at which other trains may be standing on the same line of rails. the vacuum-brake must not be used except in cases of emergency, but the speed of the train must be so reduced that it may be brought to a stand by means of the hand and steam brakes only.”

"17. The engineman before starting at the commencement of the journey, and also at stations where any of the flexible pipes have been coupled or uncoupled, must ascertain from the guard the number of vehicles in the train fitted with the brake, the flexible pipes of which are coupled up to the engine, and the number of inches of vacuum, shown by the gauge in the rear van."

Evidence.

William Perkins states: I have been 26 years in the service, and am traffic inspector at Bournemouth. On the 20th instant I was in charge of the station at Bournemouth West when the 2.38 p.m. train from Brockenhurst arrived. It was due at 3.25 p.m. and arrived at 3.35 p.m., upon No. 2 line. That is the line upon which it always arrives. There were standing upon the line against the buffer-stops the eight empty carriages of the 12.30 p.m. train from Waterloo, and one saloon which was next to the buffer-stops. I was on the up platform attending to the 3.35 up train, which was nearly ready to start. I turned round and saw the 2.38 train running in at an extraordinary pace. The engine was then, as near as I can estimate, about three lengths away from the empty carriages, and before I could do anything the collision took place. The engine was running tank first, and the tank ran underneath second-class carriage No. 65 and spread the sole-bars. One pair of the carriage-wheels were off the line. Saloon No. 14 was entirely off the rails and over the stop-block. Third-class carriage No. 712 had one pair of wheels off the rails up on the stop-block. None of the 2.38 p.m. train were off the rails, and none were much damaged. I think the train was running at 12 to 15 miles an hour when I first saw it. I could not see what the driver was doing, but the fireman was putting his hand-brake on. When I went to the engine a few minutes afterwards the engine was in reverse gear. There were four passengers in the train—two children in the front part of the train and two adults in the rear part of the train. All of them were slightly hurt, but none seriously. I asked the driver why he came in so fast, and at first he said that his brake did not act. I told him to test it, and he did so. The indicator showed a little over 10 inches of vacuum, although the pipe on the engine was damaged. I did not look at the blocks. I then left the driver. I did not look to see if sand had been applied to the rails. Steam was off when I first saw the engine. There is no special order regarding the speed of trains entering this station, except the general regulations for terminal stations. A shunter named Bevan, who was in between the empty carriages, was slightly hurt. The driver has been running in here for about four or five months, and he seems to be a steady good man.

George Swansbury states: I have been 18 years in the service, and a guard for about 10 years. I have been working for 10 years on the Bournemouth and Brockenhurst service. On the 20th instant I came on duty at 9.50 a.m. for 12 hours. I was working all the morning on the Brockenhurst branch. I was guard of the 2.28 down train to Bournemouth West, which was made up as follows:—Tank engine, running tank first, brake-van, two third-class, one second-class, and two first-class carriages, and brake-van, and carriage-truck at the rear. The whole train was fitted with the automatic vacuum-brake, except the two first-class carriages and the carriage truck, which had through pipes. With the exception of the carriage-truck, which was taken on at Bournemouth East, the train was the ordinary close-buffered train in regular use for this service. We started from Brockenhurst at 2.47 p.m., nine minutes late. We left Bournemouth East at 3.28 p.m., which was 10 minutes late, and arrived at Bournemouth West at 3.35 p.m., 10 minutes late. The speed when approaching Bournemouth West was no higher than usual. Steam was shut off a little inside the junction at the usual place. The

signals were all right for us to run into No. 2 line—the usual line. The continuous-brake was applied soon after steam had been shut off, and this reduced speed to about 10 or 12 miles an hour when we had arrived at the signal-box. The brake was then suddenly released and speed was increased. I did not feel the continuous-brake applied again. I was alarmed at the speed. I looked out and saw there was an empty train at the platform. I then applied my brake for the first time, and I kept it on. The speed when the collision took place was about 16 miles an hour according to my estimate. There had been a little rain. The rails were not very greasy. I was knocked over by the collision and slightly hurt. I did not think of applying the continuous-brake. I thought the driver would do so. The driver told me after the collision that the continuous-brake had not acted properly. It had acted properly all through the day. I did not see the inspector test it afterwards.

Robert Grundy states: I have been nearly 21 years in the service, and nearly seven years a driver. I have been working on the Brockenhurst and Bournemouth service since May 27, 1889. I know the line quite well. My regular engine was with another man on the 20th instant, and I had engine No. 52, a ten-wheeled bogie tank-engine, with four wheels coupled, leading bogie, and radial trailing wheels. My own engine—Mars—is a six-wheeled engine, with driving and trailing-wheels coupled, and a six-wheeled tender. No. 52 engine was fitted with the automatic vacuum-brake apparatus and steam-brake for the engine, worked by the same handle, and the usual hand-brake. I came on duty at Bournemouth East at 2.30 p.m. having left duty on Saturday at 10 p.m. I first went and got ready a side tank-engine for another man, and then took charge of 52 engine, which was attached to the 2.38 train from Brockenhurst, relieving the regular driver. I had never been on this engine before. The driver I relieved did not say anything to me about the brake power upon the train. I believe that all the vehicles in the train were fitted with the continuous-brake except a loose carriage-truck at the rear. I do not know that there were two carriages in the train which had only through pipes. I have never worked this particular set of carriages before to the best of my belief. All the trains which I have worked have been fitted throughout. I did not test the brake before starting. My indicator showed 17 inches of vacuum. This was the indicator of the train pipe pressure. The signals were right all the way for running into No. 2 line at Bournemouth West. The trains I have worked I have always run into No. 3 line or No. 1 line. I have never worked into No. 2 before. I have never seen carriages upon either No. 1 or No. 3 lines, so far up as the carriages were upon No. 2 line upon this day. I shut off steam at the distant-signal, the usual place, my speed being then about 25 miles an hour. I then applied the steam-brake in the engine, and the continuous-brake in the train. It seemed to be all right, and to pull the train up I reduced to about 12 inches of vacuum, applying the brake to about the usual extent. When about 10 or 12 yards from the signal-box my speed was about 9 or 10 miles an hour, and I released my continuous-brake a trifle, in order to allow the train to run forward to the end of the platform. At the same time I released the continuous-brake I released the steam-brake also. There were 12 inches of vacuum remaining in the pipe, as shown by the indicator.

Shortly before reaching the outer end of the platform I saw the empty carriages on No. 2 line. I at once did all I could to stop my train, by destroying all the vacuum, applying the steam-brake, and ordering my fireman to apply the hand-brake, which he did. After applying the continuous-brake I reversed my engine, but had not done so until just before striking the carriages. I applied back steam. I was running tank first. I think I was running at six or seven miles an hour when I struck the empty carriages. I remained on my engine and was not hurt. Nothing was shifted on my engine and none of my train left the rails. My brake was in good order and went on all right when I applied it upon seeing the carriages. I tested it after the collision, when the pipe at the then front of the engine was broken off. I could get no vacuum. The inspector must be wrong if he says the indicator showed 10 inches of vacuum, when I tested it in his presence. When Mr. Perkins got on my foot-plate he asked me what vacuum I had. I told him I could not get any vacuum. I tried the big ejector, and could get no vacuum. I have never

worked No. 52 engine before, but I have worked a sister engine. I cannot say whether or not any of the trains I have worked into Bournemouth have been "block" trains. I know the regular trains I work are not block trains; they are composed of carriages detached from main line trains. I did not ask the guard at Bournemouth East anything as to the number of vehicles fitted with the brake. I had only two minutes there. I can only account for the collision by the carriages being further up the platform than I expected to find them.

Charles Braxton states: I have been 10 years in the service, and about two years and four months a fireman. On the 20th instant I was fireman with driver Grundy. I have heard my driver's evidence read over, and I agree with it, except that Inspector Perkins is right in saying that the indicator when the brake was tested after the collision showed some vacuum. I think it was 10 to 12 inches. I have worked on No. 52 engine before with this driver. I do not remember any case of the brake not acting.

Conclusion.

This collision was clearly due to the driver of the 2.38 p.m. down train failing to see that the platform line, upon which he was entering the station, was occupied for nearly half its length by a train of empty carriages. He had reduced his speed by the use of the continuous-brake, with which the engine and five out of the eight vehicles in the train were fitted, and when about 200 yards from the outer end of the platform and 310 yards from the point of collision, he had released his brake to let the train run forward to the end of the platform line. He seems to have been running in rather too fast to have been able to stop even then without the use of his continuous-brake, which, by a most proper rule, drivers are forbidden to use except on an emergency; but it is just possible that he might have been able to do so.

As it was, however, he ought to have stopped 100 yards or more short of the buffer-stops, and this he might have done if he had seen the empty carriages occupying the line as soon as they were within view. He says that he saw them when over 200 yards from them, and that he then applied the continuous-brake again; but this cannot be correct, for the brake was admitted to be in good order, and it could not have failed to stop a train travelling at 10 miles an hour long before it had run 200 yards.

The guard did not feel the continuous-brake applied at all after it had been released near the signal-box, and although the driver says that he at once, after applying the brake, reversed his engine and applied back steam, he admits that he had not time to do so until just before striking the carriages. It seems probable, therefore, that the driver did not see the empty carriages until he had entered the platform line.

It was a clear day, and he ought to have seen them at least 300 yards away. He had at the time been on duty for under $1\frac{1}{4}$ hours.

It appears from his evidence that he was under the impression that the whole of his train, except a carriage truck at the rear, was fitted with the continuous-brake, whereas two of the carriages had through pipes only. His ignorance did not contribute in any way to this accident, but, as it is most important that drivers should have full information as to the brake power available, it should be made clear that Rule (No. 17), under which they are responsible for obtaining it "at the commencement of the journey," or "at stations where any of the flexible pipes have been coupled or uncoupled," applies also to cases where one driver relieves another on the journey, and the flexible pipes are not interfered with.

If the guard had applied the continuous-brake, instead of his hand-brake only, when he took alarm at the high speed, it is probable that he would have averted the collision.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade

F. A. MARINDIN,

Major, R.E.

APPENDIX.

COLLISION at BOURNEMOUTH WEST, January 20th, 1890.

DAMAGE resulting therefrom.

Remarks.	Vehicles.	Damage.
Engine No. 52 - -	- - -	Tank slightly bulged in, one vacuum-pipe broken engine-head lamp knocked flat.
No. 65 block, train hauled by No. 52 engine.	166, First - - 341, Third - - 190 Second - - 38, Third - - 21, Van - -	Buffer bent, body slightly shifted on frame. Buffer driven up. Two quarter-lights broken. Four quarter-lights broken and one buffer driven up. Two buffer-blocks broken.
Attached at rear of the train -	278, Great Western Railway car truck.	One wheel-bar broken.

DAMAGE to part of Eight Empty Carriages which were standing in the Station.

65, Second -	Two sole-bars, headstock, diagonals, crossbearers, footboards, spring fasteners, drawbar, vacuum main pipe and three quarter-lights broken, end of body knocked in and body shifted off underframe; axleguards and brake gear bent.
267, First -	Mirror in end compartment broken.
391, Composite -	Four angle-plates for buffer packing and footboards broken.
712, Third -	Footboards broken and buffer-rods bent.
14, Saloon -	Two footboards, two buffer-blocks, and one side-light broken. One axle-guard and two buffers bent. Vacuum cylinder and brake gear damaged; corner of roof damaged.

Printed copies of the above report were sent to the Company on the 24th February.

MIDLAND RAILWAY.

Board of Trade, (Railway Department),
Whitehall, London, S.W.

5th April 1890.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 31st ultimo, the result of my inquiry into the causes of a collision which occurred on the 28th ultimo, at Masboro' on the Midland Railway.

In this case, the 7.51 p.m. down passenger train from Chesterfield to Sheffield via Masboro', (consisting of engine and tender, brake-van, one composite, two third-class, and one composite carriages, and brake-van), when running into Masboro' station upon the down main line at 8.33 p.m., came into collision with the engine of the 8.10 p.m. express goods train from Sheffield to Carlisle, which, with two loaded waggons and a guard's brake attached, had been brought to a stand at the Masboro' station south junction down home-signal for the line from Sheffield, had by mistake been started before the signal was lowered, and had fouled the junction.

None of the vehicles in the passenger train left the rails, although two couplings were broken, but the goods engine and tender were driven forward in front of the passenger engine for about 40 yards and the two goods waggons were thrown off, one of them being upset on to the down goods lines.

Five passengers have complained of injury, and the driver of the passenger train also was hurt.

For a return of the damages to the permanent-way and the rolling-stock see Appendix.

Description.

At Masboro' station south junction, which is close to the south end of the station, the line from Chesterfield via Eckington, running from the south-east, is joined upon the west side by the line from Sheffield running from the south, the trailing points of the junction being upon the down line. Both these lines are double, and there is also a down through goods line from Sheffield.

The signal cabin is situated upon the west side of the line, outside the down goods line, and about 12 yards south of the junction trailing-points.

The only signals to which it is necessary to refer are the junction down home-signals which are upon two separate posts about 45 ft. high, in the angle between the two main lines, 94 yards south of the junction trailing points, and 34 yards south of the point of collision, which was upon the crossing of the left rail of the down line from Eckington and the right rail of the down line from Sheffield. The line from Eckington is nearly straight, and the line from Sheffield is upon a curve to the left looking north.

The gradient is a slightly rising one, northwards.

Block-working under the usual rules is in force.

Evidence.

Thomas Smith, signalman; in the service about 28 years, signalman about 19 years, and at Masboro' station south junction about 16 years, said: On March 26th I came on duty at 2 p.m. to remain until 10 p.m. I went off duty the previous day at 10.0 p.m. The block telegraph signals at Masboro' station south junction are not booked. The 2.10 p.m. express goods train from London to Carlisle arrived at my post at about 8.10 p.m. It was drawn over the junction and shunted on to the down goods line between the Masboro' station south junction and Holmes junction. Shortly afterwards the 7.55 p.m. mineral train from Sheffield to Mexboro', consisting of engine and brake only, arrived on the down passenger line, and was placed in the wharf siding alongside the down goods line from Holmes junction. After attaching a number of waggons it proceeded on its journey on the down goods line. After the engine and brake of the Mexboro' train had been placed in the wharf siding the 7.5 p.m. passenger train from Derby was signalled and passed on the down passenger line in the usual way. The 8.15 p.m. passenger train from Sheffield to York followed on the down passenger line, and after this train had passed I received the signal from Holmes junction for the 8.10 p.m. express goods train from Sheffield to Carlisle. I gave permission for this train to approach in accordance with clause 3 of the block telegraph regulations. I kept my signals at danger against this train, and the engine was brought to a stand near to the down passenger line home-signal at about 8.32 p.m. At about the same time I received the "Is line clear" signal for the 7.51 p.m. passenger train from Chesterfield to Sheffield via Masboro'. I gave permission to the south junction for the train to approach, and after I received the "Train out of section" signal from the north junction for the York train I gave the "Is line clear" and "Train entering section" signals to the north junction for the Chesterfield train to enter the station. My distant-signal remained at danger against the Chesterfield train, and I lowered the home-signal for it to enter the station when the train was near to the south junction. I then lowered the home-signal for the down goods line to allow the engine that had brought in the London train to run forward to go into a siding alongside that line, in order that the goods train from Sheffield could follow the passenger train from Chesterfield towards the passenger station, and be attached to the train from London. I then heard someone shout, "Come on, Jubilee," and I understood this to be a shout from one of the shunters calling to the driver of the London train to come forward, as the signal had been lowered for him to do so. At this time the up line was obstructed by a shunting engine with some waggons attached in consequence of a previous train having to do work at the south sidings, and in order to ascertain what arrangements it was necessary to make for the Chesterfield engine to run round its train to take it to Sheffield, I went to the telephone to ask the signalman at the north junction if he knew what train it was that was at the south sidings. I could not gain the attention of the north junction signalman, and when I returned from the telephone I noticed that

the engine of the goods train from Sheffield had passed my home-signal at danger, and was running foul of the down main line. I called out to the driver, and placed my home-signal to danger in front of the Chesterfield passenger train, but at this time the train was very near to the signal, and I very much question whether the enginemen saw it reversed. I also placed the home-signal applicable to the down goods line to danger, and exhibited the danger-signal with my hand-lamp, waving it violently, and this caused the light to go out. Directly afterwards the collision took place. I had no conversation afterwards with the driver of the Sheffield to Carlisle goods engine. I think this train was at a stand when the collision took place. The passenger train was, as near as I can judge, running between 12 and 15 miles an hour. I heard no whistling, and I doubted whether the driver of the passenger train had seen the goods train at all. The junction was quite clear at the time, and there was nothing on the sidings between the two lines. It was a beautiful clear night, and not particularly dark, although there was no moon at the time.

Robert Childs, in the service 17 years, and seven years as porter at Masboro', said: When on day duty I attend to passenger trains, and when on night duty I assist with goods trains also. On March 26th I came on duty at 6.0 p.m. to remain until 7.0 a.m. I left duty on the morning of the 26th at 7.0 a.m. The 2.10 p.m. express goods train from London to Carlisle arrived at Masboro' at 8.12 p.m., and was shunted on to the down goods line from Holmes. After the passenger train from Sheffield to York had passed, the home-signal applicable to the line from Staveley was lowered, and the home-signal for the down goods line from Holmes, applicable to trains running forward on the down goods line, was also lowered for the purpose of allowing the London engine to leave its train to be shunted into one of the wharf sidings, when I saw the goods line home-signal lowered. I called out, "Come on, Jubilee," and then turned my back towards the train. Very shortly afterwards I heard the signalman call out, "Where is he coming to?" and on turning round I saw the engine of the Sheffield train running towards the main line. I gave a red light to the driver, and shouted, but apparently my signal was not seen. Shortly afterwards the engine ran foul of the down main line, and the engine of the passenger train from Chesterfield came into collision with it. The engine of the London train did not leave its train, and it is fortunate that it did not do so, as one of the waggons on the Sheffield train was thrown foul of the down goods line by the force of the collision. The engine of the Sheffield train was standing on the down passenger line at the down home-signal when I shouted, "Come on, Jubilee." "Jubilee" is the name by which the 2.10 p.m. express goods train from London to Carlisle is known. When I turned round and showed a red light to the Sheffield engine it was nearly foul of the crossing. I was standing near the up starting-signals, and the engine was just passing me. The engine came almost to a stand, and then seemed to start forward again. I do

not think the driver of the passenger train saw the goods train at all.

Joseph Jackson, engine-driver, in the service since August 1887, and an engine-driver all the time, said: I had previously been in the service of the North-Eastern Company about 19 years, and as a driver about 15 years. On the 26th I came on duty about 6.30 p.m. (my proper time for signing on duty being 6.50 p.m.) to work the 8.10 p.m. goods train from Sheffield to Carlisle. I left duty at 4.5 a.m. on the 26th. I left the Wicker goods yard, Sheffield, about right time. My train consisted of six-wheel coupled engine, 1582, and six-wheeled tender, running engine first, two loads of goods, and a guard's brake in the rear. All the wheels of the engine and tender were fitted with the steam-brake. Nothing unusual took place between Sheffield and Masboro'. On approaching Harrison and Camm's sidings signal-box the signals were at danger. I passed the distant-signal in that position, and when near to the home-signal it was lowered for me to proceed. The distant-signal worked from Holmes junction was at danger, and remained so, and when between Harrison and Camm's sidings and Holmes junction, the home-signal was lowered for me to proceed on the down passenger line. I was running at a slow speed at the time. The distant and home signals applicable to the down passenger line, worked from the Masboro' station south junction, were at danger, and I brought my engine to a stand on the down passenger line, near to the station south junction home-signal applicable to that line. I applied the steam-brake for the purpose of bringing the train to a stand, and told my fireman to apply the hand-brake in order that the tender-brake might remain on during the time we were standing. I then left the foot-plate of the engine and went along the frame on the near side to put oil in the lubricator, and when in the act of doing so, I heard some one call out, "Come on, Jubilee," and understood it to mean that my train was to come forward. I therefore called to my fireman and said, "Come on, George," intending him to understand that I was in a safe position, and that the engine could be moved, so far as I was concerned; but it never occurred to me that he would bring the engine forward unless the signal was lowered for him to do so, and I was so satisfied that he would not move the engine unless the signal was lowered that I did not look at the signal myself. Shortly after the engine was in motion, I heard the signalman shout, "Where are you going?" and directly afterwards the collision took place, and I was thrown from the frame of the engine on to the ballast. I received a slight bruise on the chest, but am now all right. The left-hand buffer of the engine of the Chesterfield train struck the right-hand buffer of my tender. The waggon next to my tender was thrown on its side on to the down goods line; the second waggon was thrown off the rails, and the guard's brake in the rear came to a stand alongside and close to the leading van on the passenger train. The steam-brake was applied when the signalman called out and my engine had come nearly, if not quite, to a stand when it was struck by the passenger engine. I did not hear or see anything of the passenger train coming. What I had to do was to draw forward and then back on to the London goods train to take it to Carlisle, the London engine taking my brake back to Sheffield.

George Burton, said: I have been in the service as a fireman since August 1887. I had previously been in the service of the North-Eastern Company for three years as engine-cleaner and fireman. On March 26th I came on duty at 6.50 p.m., to act as fireman with driver Jackson, with the 8.10 p.m. goods train from Sheffield to Carlisle. I left duty the same day at 4.5 a.m. After standing at the Masboro' station south junction down passenger line home-signal about three minutes, and when the driver was on the frame on the near side of the engine, I heard

some one shout, "Come on, Jubilee." The driver immediately said, "Right, George; come on?" and I at once gave the engine steam, and went forward without looking at the signal. Shortly afterwards I heard the signalman call out, "Where are you going to?" and immediately afterwards the collision took place. The collision forced me forward, but I was not injured. During the 2½ years I have been at Sheffield I have worked in all directions in which the Sheffield engines work, and have passed Masboro' nearly every day, and am well acquainted with the road and signals. I shut off steam and applied the steam-brake immediately the signalman called out, and my engine had very nearly come to a stand before it was struck. I did not sound the whistle. If I had looked round, I might have seen the passenger train coming, and I might have seen the signal from Eckington lowered if I had looked.

Henry Sinfeld, goods guard, in the service 13 years, a goods guard seven years, and accustomed to work through Masboro' all the time, said: On March 26th I came on duty at 7.40 p.m. to work the 8.10 p.m. goods train from Sheffield to Carlisle. I left duty at 8.20 a.m. the same day. On leaving Sheffield my train consisted of engine No. 1582, tender, two waggons, and a guard's brake in the rear, in which I travelled. We left Sheffield right time and arrived at Brightside on the down goods line. We remained there until the passenger train from Derby to Leeds, and the one from Sheffield to York had passed. We then proceeded to Masboro'. The distant-signals worked from Harrison and Camm's sidings, and Holmes junction were at danger, but the home-signals were lowered for us to proceed, and my train was brought to a stand at the Masboro' station south junction down passenger line home-signal at 8.32 p.m. The guard who had worked the 2.10 p.m. goods train from London to Masboro' came to my brake and entered it, as the engine that brings the train from London to Masboro' takes my brake from Masboro' to Sheffield, and the guard's brake that comes from London goes through to Carlisle. I took my basket and signals from my brake, and was proceeding towards the brake of the train that came from London when I heard the collision.

Henry Hill, fireman, in the service about 6½ years, a fireman since August 1887, and at Hasland all the time, said: I have been accustomed to run through Masboro' all the time I have been a fireman. On March 26th I came on duty at 12.30 p.m. to work the 1.35 p.m. passenger train, Sheffield to Nottingham, the 4.15 p.m. Nottingham to Trent, 5.54 p.m. Trent to Chesterfield, 7.51 p.m. Chesterfield to Sheffield via Masboro', and the 10.52 p.m. from Sheffield to Chesterfield via Dronfield. I left duty the same day at 12.45 a.m. On leaving Chesterfield the train consisted of six-wheeled engine No. 41 with driving and trailing wheels coupled, and six-wheeled tender, running engine first, and six passenger vehicles. The driving and trailing wheels of the engine and all wheels of the tender were fitted with the steam-brake and all the carriages were fitted with the automatic vacuum brake, the whole being applied by one lever from the foot-plate of the engine. Efficient stops were made by the use of the continuous brake at the various stations on the journey. We left Chesterfield near to the booked time. Nothing unusual took place between Chesterfield and Masboro'. When we passed the Masboro' sorting sidings south junction, the distant-signal worked from the north junction was at danger. My driver shut off steam, and when between the distant and home signals the sorting sidings north junction home-signal was lowered. The south junction distant-signal was at danger, and when between that signal and the home-signals the proper home-signal was lowered, and when between the home-signals and the starting-signals, the proper starting-signal was lowered, and just about this time the home-signal worked from the station south junction was lowered

The train was running without steam, as steam had not been re-applied after being shut off near to the sorting sidings south junction. I was on the near side of the engine and the driver was on the six-foot side having charge of the regulator and the continuous brake. Just before reaching the station south junction I looked on the near side to see if the line leading to the turn-table was clear. At this time the home-signal was still lowered, and I then took hold of the whistle with my right hand for the purpose of opening it when approaching the foot level crossing, and just about this time I saw the guard's brake and one waggon in front of it immediately in front of us, and the next moment the collision took place. The speed of my train at the time of the collision would be, I think, about 16 miles an hour. The driver had slightly applied the brake at different times approaching the various signal-boxes, and I am not able to say positively whether he had succeeded in applying the brake forcibly before the collision took place or not, but when the train came to a stand the brake was fully applied. The force of the collision appeared to twist me round and threw me backwards. I quickly regained my feet and found that my driver had received a severe blow on the forehead and did not appear to know exactly where he was. He was afterwards attended to by a doctor, and ultimately worked the engine with the empty carriages from Masboro' to Sheffield and took the engine light from Sheffield to Hasland, but he has been off duty since and is now confined to his bed. After the collision the driver told me he sighted the engine of the down goods train by the light of the platform lamps, and had succeeded in applying the continuous brake before the collision took place. I did not see the Masboro' station south junction down home-signal placed to danger. My back was slightly hurt, but I have continued to follow my employment. It was a fine clear night.

Geo. Edward Hault, in the service about eight years, a porter guard about seven years, at Sheffield all the time, and accustomed to work in the neighbourhood of Masboro' all the time, said: On March 26th I came on duty at 8.30 a.m., to perform

platform duties until 12.10 p.m.; then work the 12.10 p.m. passenger train, Sheffield to Chesterfield, return from Chesterfield to Sheffield as a passenger, work as guard with the 4.0 p.m. train, Sheffield to Derby, 6.0 p.m. train, Derby to Chesterfield, and 7.51 p.m. train, Chesterfield to Sheffield via Masboro'. My train on leaving Chesterfield consisted of engine No. 41, tender, and six passenger vehicles in the following order:—Leading van, composite carriage, two five-bodied third-class carriages, composite carriage, and guard's van in the rear, in which I travelled. We left Chesterfield right time, and nothing unusual took place between Chesterfield and Masboro', except that the signals approaching Masboro' were at danger, and the speed was considerably reduced at the sorting sidings north junction. The signals were ultimately lowered and the train proceeded towards Masboro'. When near to the pumping-engine house, I noticed that the home-signal, worked from the station south junction, was lowered. Shortly afterwards, while I was standing up in my van, I felt the brake forcibly applied, and I then stooped and looked through the projecting light on the near side, and at the same moment the collision occurred, and threw me on to the seat. My hand-lamp, which was on the floor of the van, was thrown over, but the light was not put out. I think the speed of my train at the time of the collision would be about 15 miles an hour. None of the vehicles on my train left the rails. The draw-bar hook of the guard's van next to the tender, and the draw-bar hook of the composite carriage next to the front van were broken, and there was a space between the tender buffers and the buffers of the leading van, and between the buffers of that van and the carriage next to it. Directly after the collision took place, I found that there were shunters and others to attend to the passengers, and I left my train to run back to the south junction, in order that I might advise the signalman there what had taken place. There were about 20 passengers in the train. The train had to stop at the down platform at Masboro'; where the engine would run round it to take it to Sheffield. The speed was about the same as usual with such trains.

Conclusion.

This collision, which would certainly have been a serious one had it not been for the prompt application and efficient action of the continuous brake upon the passenger train, took place under the following circumstances.

At about 8.10 p.m. the 2.10 p.m. down express goods train from London to Carlisle, arrived at Masboro' from Chesterfield, and was placed upon the down goods line, and at about 8.32 p.m. the 8.10 p.m. down goods train from Sheffield arrived upon the down passenger line, and came to a stand at the down home-signal for that line. At the same time the signalman in the junction signal-box received the "Is line clear" signal for the 7.51 p.m. down passenger train from Chesterfield on the line from Eckington; the train was duly accepted, and the down home-signal for that line was lowered for it. In usual course the engine of the 2.10 p.m. down goods train is detached from the train at Masboro', and takes back to Sheffield the guard's brake-van of the 8.10 p.m. goods train from Sheffield, the engine of which, with the waggons comprising the train (in this case only two), being drawn forward over the junction, and then backed on to the waggons of the 2.10 p.m. down train, which it takes forward to Carlisle.

This goods train is known among the men all along the line as "Jubilee."

The 7.51 p.m. down train from Chesterfield stops at the down platform at Masboro', and the engine is then run round the train to take it to Sheffield.

After the 8.10 p.m. down goods train had come to a stand, the driver left the foot-plate and went along the left side of the engine to put oil into the lubricator, and while he was so engaged the down goods line signal was lowered for the engine of the 2.10 p.m. down goods train to go forward, after being uncoupled from the train, and the shunter in charge called out to the driver of this engine, "Come on, Jubilee." The driver of the 8.10 p.m. goods train thought that the call was to him, and he shouted to his fireman to "Come on," upon which, without looking, either at the signal, which

remained at danger, or towards the other line, the fireman started, and although he tried to pull up as soon as he heard the signalman shout to him, he had fouled the crossing of the junction before he was able to stop. The passenger train was then close upon him, and was running probably at nearly 15 miles an hour, when it struck the goods engine, the driver having only just time to apply the continuous brake.

The down home-signal from Eckington was thrown to danger by the signalman as soon as he saw that the goods train had started, but the engine of the passenger train had by that time passed it.

The collision was due entirely to the fact of the goods train having been started against the signal for the line upon which it was standing, and the responsibility for it must be shared between the driver and the fireman, the latter being the more blameable of the two.

The driver showed a want of caution in calling out to his fireman to "Come on," simply upon hearing the shunter call "Come on, Jubilee," and the fireman was careless and committed a breach of the regulations in starting his engine without looking at the signal.

Both men had been on duty for under two hours.

The signalman and the driver of the passenger train are entirely free from blame, and the latter, who seems to have been very prompt in applying his continuous brake, was quite justified in approaching at the speed at which he was running, as the place at the down platform at which he had to stop is some 200 yards north of the junction.

I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

F. A. MARINDIN,
Major, R.E.

APPENDIX.

DAMAGE to PERMANENT-WAY.

One chair and the end of the lever-bolt fitting into the standard of the lever frame broken. One point-rod slightly bent, and some of the boxing covering the rods and wires torn up.

DAMAGE to ROLLING-STOCK.

Goods engine, No. 1582.—One wrought-iron tender buffer damaged and required renewal.

Passenger engine, No. 41.—Left-hand engine buffer and buffer plank smashed; left leading engine axle-box undercap broken; left-hand steps of both engine and tender broken; tender foot-plate on left-hand side broken; fall-plate between engine and tender and vacuum pipe damaged; left-hand injector waste-water pipe broken.

Passenger van, No. 361.—Side grazed, beading and projecting box, door hinges, step boards, step irons, drawbar hook, and axle-box front broken.

Composite, No. 54.—One drawbar-hook broken.

Third-class, No. 1264.—One quarter-light broken.

Goods brake, No. 274.—Side grazed, two step boards, step irons and undercap broken.

Midland Railway waggon, No. 82,344.—One side rail and sole damaged; one brake-guard, one axle-box, and one door-band broken; axle-guards and buffer-hoop bent.

Midland Railway waggon, No. 63,306.—This was thrown over on its side, breaking two soles, two headstocks, one side rail, three buffer castings, one drawbar and straps, bolts, and bending axle-guards, buffer-rods, &c.

Printed copies of the above report were sent to the Company on the 26th April.

NORTH BRITISH RAILWAY.

Board of Trade, (Railway Department),
1, Whitehall, London, S.W.,

17th February 1890.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 28th ultimo, the result of my enquiry into the causes of a collision which occurred on the 20th ultimo, at Maryhill station, on the North British Railway.

In this case after the 12.20 p.m. up goods train from Helensburgh to Kipps, consisting of engine and tender, nine empty and one loaded waggons and brake-van, had been standing for some minutes at the up home-signal for the Helensburgh line at Maryhill West junction, the signal was lowered with the object of bringing this train forward to attach it to two light engines standing close behind the 5.50 p.m. up Circle passenger train from Maryhill to Glasgow, consisting of engine and tender, third-class brake carriage one third-class, two first-class, and one third-class carriages, and third-class brake carriage, which was standing at the up platform at Maryhill just ready to start. The

goods train came into collision with the two light engines and drove them forward on to the passenger train, which parted between the second and third carriages, the engine and two leading carriages being driven ahead for about 20 yards, and the rear portion of the train for about 10 yards.

No vehicles left the rails, but the three rear vehicles in the passenger train were buffer-locked, and the ends of two of them were considerably damaged.

Three passengers are returned as having been injured, and the rear guard of the goods train had his collar-bone broken. The driver and fireman of this train were also slightly injured.

A return of the damages to the rolling stock is appended.

Description.

At Maryhill, the Glasgow, Dumbarton, and Helensburgh branch, running from west to east to Glasgow via Cowlaers, is joined by the Stobcross branch on the south side of the line, the trailing-points of the junction being upon the up line to Glasgow.

The signal-cabin for the junction and station is Maryhill West cabin, which is situated upon the up or north side of the line close to the junction and upon the west end of the up platform.

The trains running upon the Glasgow Circular Service leave Maryhill up platform, run via Sighthill to Glasgow College and Queen Street low-level stations, and return to Maryhill on the up line of the Stobcross branch.

The point of collision with the light engines was opposite to the east end of the signal-cabin, and the tail of the passenger train on to which the light engines were driven was 35 yards east of the cabin.

The up-signal for the Helensburgh line from which the goods train came forward is 282 yards west of the point of collision, and a red light at this point can be seen for the whole way from the Helensburgh branch up home-signal.

Between this home-signal and the point of collision the Helensburgh line is nearly straight, and upon a falling gradient of 1 in 150 for 92 yards, and is then level for 190 yards.

Kelvin Valley junction, or Maryhill East signal cabin is 550 yards east of Maryhill West cabin, and the up distant-signal from this cabin is a lower arm upon Maryhill up advance starting signal-post, controlled by the upper arm. This signal-post is 222 yards ahead of the point of collision.

The line is worked upon the absolute block system.

Evidence.

Thomas Ketchin states: I have been for about 5½ years in the service, and a signalman for four years, and about three months at Maryhill. On the 20th ultimo I came on duty at 7 a.m. for 12 hours in Maryhill West junction box. There are 25 levers in the frame, and block instruments. We work block in all directions under the ordinary regulations in use on the North British Railway. The adjacent block cabins are Knightswood North junction, westward, on the Helensburgh line, about one mile distant; Daws Holm on the Stobcross branch, about 460 yards distant; and Maryhill East junction, eastward, on the Helensburgh line, about 500 yards distant. The Circle passenger train, which leaves Maryhill at 4.50, and is due to arrive back there at 5.34, was offered to me at 5.31 from Daws Holm. I accepted it under the section clear but station blocked signal at 5.31. It arrived at 5.35, and came to a stand at the up platform at the usual place. I had lowered my signal for it to come on, but I cannot say exactly at what time. The reason that I accepted it at caution was that an up goods train was passing the junction at 5.34. I had accepted this train from Knightswood North junction at 5.22. The passenger train was due to leave Maryhill at 5.50. Sometimes it is shunted between 5.34 and 5.50, but more often it is kept at the platform. At 5.35 a light engine was offered to me from Daws Holm. I accepted it at caution, and kept my home-signal at danger. It arrived at the home-signal at 5.39. I saw that it was the ballast engine, and I was also told so on the speaking instrument from Whiteinch junction, the second

block station beyond Daws Holm. I knew therefore that it had to go to Cowlaers. I lowered my branch home-signal for it at about 5.46, the driver having whistled for it before he arrived at it. I cannot remember whether I showed any hand-signal to this driver after lowering the home-signal. He came slowly forward and came to a stand about four yards behind the passenger train, and I cleared the line back to Daws Holm at 5.48. There was another ballast engine standing on Addies siding, which joins the up Helensburgh line inside the home-signal. I knew that the engine also had to go to Cowlaers. I set the points of the siding and lowered the siding-signal for this engine to come out immediately after the first engine had come to a stand. It came out and stood close behind the first engine, and they were coupled together. They were both tender engines. The tender of the second engine was standing on the junction trailing-points. I altered these points so as to lie for the main line as soon as the first engine had passed them. The 12.20 up goods train from Helensburgh was offered to me from Knightswood North junction at 5.34. I accepted it at caution at once. My home and distant signals were kept at danger, and the train came to a stand at the home-signal at 5.39. At about 5.48, immediately after the two engines had been coupled together, I lowered my home-signal for the goods train to come forward. I had no verbal communication with the driver, but I held a red hand-lamp out of my box. I did not wave it. My object in lowering the home-signal was to bring the goods train forward to attach it to the two engines, so that they

might all go forward to Cowlairs together, after the passenger train. The goods train, instead of stopping, ran into the two engines, and drove them forward on to the passenger train at 5.49. Steam was not shut off until the goods engine was within three or four yards of the two engines. I thought immediately after it had passed the home-signal that the driver was not going to stop, as the train seemed to be coming too quick. I kept my red lamp out, but did not wave it. I did not call out to the driver as he was passing my box. I think the train passed my box at a speed of 10 or 12 miles an hour. I did not see whether the tender or engine brakes were applied. The driver had sounded his whistle when standing at the home-signal, but did not sound it afterwards. This goods train was due at 2.25. There was a red tail-lamp in the rear of the second of the two engines. The tail-lamp which had been on the first engine had been turned. The light was burning properly. It was a clear night at the time, but it was dark. There is an up starting-signal at the east end of the platform. I am in the habit of bringing trains and engines forward in this manner. According to the rules I should not lower my home-signals when the line is not clear to the starting-signal. I did so in order to expedite the work. Immediately after the collision I went down out of my box and spoke to the driver of the goods train. He was sitting on his engine. I asked him if he was hurt. I did not make out what he said in reply. I said nothing else to him. I met the fireman on the stairs of my box as I was going down. He asked me if we "meant to kill persons." I said I had no intention of doing so, but that it was "a strange way to come forward." That was all which passed between us. I did not say anything to the driver or fireman about my red hand-signal. The driver was the worse for liquor. I am certain that he was not merely dazed from the effects of the accident. I saw him afterwards, about half-past 8, on the platform. He asked what time he would get a train home, but that was all which was said. While the goods train was standing at the home-signal the head guard came to my box. He told me there was no traffic for him to lift and that he would want to go right away. I told him that I would bring his train forward and attach it to the engines. He said, "Bring it forward, and I will attach them." I did not tell him to warn his driver. He did not go back to his train, but stood in front of my box. When his train was coming forward he was showing a red light towards this train. The goods train is timed to stop and do work at Maryhill. At the time of the collision my up starting-signal was at danger. The distant-signal from Maryhill East junction, which is a lower arm on my starting-signal, was at danger, but the main line up home or junction signal was off. This signal had been lowered after I had offered the passenger train to Maryhill East junction at 5.49, and it had been accepted.

Robert Martin states: I have been about 17 years in the service, and an inspector in the traffic department. On the 20th January I was sent at 10 a.m. to relieve Mr. Graham, the station-master at Maryhill, who was absent on leave. At the time the accident happened I was inside the office. I did not see the passenger train arrive, or the light engines come out, or the collision. When I heard the noise from the collision I came out. I found that no vehicles on either train were off the rails. The passenger train had parted between the second and third carriages from the engine, and there was an interval of 30 or 40 feet between the two portions. There was nothing the matter with the two leading carriages. The last three carriages were buffer-locked, and the end panels of two carriages were damaged. There was a space of a few feet between the light engine and the last carriage. The goods engine was close up on the light engine. Three passengers were injured. I attended to the passengers, and did not look to see the position of the signals. I then examined the trains,

When examining the trains I saw the goods driver on his engine. He was leaning on one of the boxes at the side of the footplate. I did not speak to him, as some one came and called my attention to something else. The driver looked dazed, but whether from the effects of the shock or from drink I cannot say. He had the appearance of a man who was the worse for drink. The line was clear in about 50 minutes. There was a little snow and sleet falling at the time of the collision, but not enough to make it difficult to see a red light.

John Smith states: I have been about 13 years in the service, and four years a passenger guard. On the 2nd January I came on duty at 2 p.m. for nine hours. I was working all day with the same train on the Circle service. It was made up as follows: engine and tender, third-class brake-carriage, one third-class, two first-class, and one third-class carriages, and third-class brake-carriage. We arrived at Maryhill at about 5.35, I think, and the train was due to leave again at 5.50. I did not see the light engines come up and stand behind my train, but I saw them before I gave the signal to my train to start. I gave this signal at 5.50, and at that time the starting-signal and the distant-signal for Maryhill East junction were off. I did not see the home-signal at Maryhill East junction. My driver had whistled, but had not actually started, when the collision took place. I was standing on the platform opposite the third-class carriage in front of the van. There was a space of 5 or 10 yards between the first of the light engines and my train. The engines were driven violently forward on to my train, and my van was driven forward about one carriage length. The train after the collision was in the position described by Inspector Martin. I saw only two injured passengers; they had cuts on the forehead. I first attended to the passengers, and then someone told me that the driver of the goods train was injured. I went to attend him. This was about a quarter of an hour after the collision. He was sitting on the right-hand side of his engine. He had a slight burn on the right side of his throat, but did not seem to be otherwise injured. In my opinion he was drunk. I do not think that he was dazed from the shock of the collision. I spoke to him. I asked him where he was injured. He told me to "Go away down," and that there was nothing wrong with him. That was all which passed between us. There were two or perhaps three others on the engine at the time. The only one I know was the fireman of the Maryhill pilot engine. It was dark, and there was a little snow falling at the time. There was a red tail-lamp on my train, and two red side lights on my van at the rear end. I think I could have seen a red light 100 yards off. I am quite sure that it was 5.50, both by my watch and the station clock, when I gave the signal to my driver to start, and that the collision occurred immediately after that. I am sure the driver had whistled. I think I got the usual signal for starting from a porter—Goldie, I think, was his name. I was not informed by anyone that the engines or the goods train were being brought up behind my train. I have often taken the order to start from the porter on the platform.

John Livingstone states: I have been about 19 years in the service, and about 12 years a driver. On the 20th January I came on duty at 10 a.m. till 10 p.m. I was off duty for about two hours, the middle of the day. I was driving all day in the Circle service. When the collision took place at Maryhill I had just received the signal from my guard to start, but I had not actually started. My brake was off. The starting-signal was off, but I cannot say in what position the Maryhill East junction signals were standing. It was snowing heavily at the time, but I could see the signals plainly. My engine was driven forward fully the length of the engine and tender. I heard the noise of the first collision before I felt the shock from the second. The first collision was just

as I received the signal from my guard to start. I did not see any of the men connected with the goods train afterwards.

Alexander Good states: I have been about 13 years in the service, and nearly four years a driver. On the 20th January I was driving engine No. 497. I came on duty at 5 a.m. for 13 hours. I was not off duty during the day, and was employed with a ballast train; that is my regular work. I came from Partick at about 5.20, and had to go light to Cowlairst. I was brought to a stand at Maryhill West junction branch home-signal, and stood for perhaps three or four minutes. While standing, I saw the tail-lights of the passenger train standing in the station. I had no communication with the signalman while standing at the home-signal. I sounded my whistle and the signal was lowered. I got no hand-signal from the signal-box. I was not told what I had to do, but I guessed that I had to draw up behind the passenger train, as I had done the same thing more than once before. I came forward slowly, and when opposite to the box the signalman told me to draw up over the trailing-points so that they might be shifted for the engine to come out of Addies siding. I came to a stand about two yards behind the passenger train, and waited there for a minute or so till the other engine came out and was attached behind me. I was tender first, and the other engine was engine first. I had a head-lamp and one red tail-light. When the two engines were coupled, my fireman shifted the tail-light. It was not long after that that the collision took place. I did not know that the goods train was being brought forward to be coupled to us. I have never known such a thing done before. I heard the driver of the engine behind me give two or three sharp whistles, and that was the only warning I had of the collision. I had not heard the goods train coming. I cannot give any information as to the speed of this train. I heard no whistle from the goods train. I was not hurt to any extent worth speaking about. My fireman was struck on the side by the fire-bar picker. It was snowing at the time. I could not see the signals ahead as they were hidden by the over-bridges at the station and by the passenger train. After the collision I went back and saw the driver of the goods train sitting on his engine. I had no conversation with him. I cannot say in what state he was.

John Tassie states: I have been over five years in the service, and two years and four months a fireman. On the 20th January I was fireman with driver Good. My driver's evidence is correct so far as I know. I also went back to the goods engine. I think it was before my driver went. I did not get on to the footplate to speak to the goods driver. He was lying along the seat on the right-hand side of his engine.

Alexander Gartshore states: I have been about 27 years in the service, and about 20 years a driver. On the 20th January I came on duty with engine No. 10 at 5 a.m. for 13 hours. I was working all day with a ballast train. A little before 5.50 I was brought out from Addies siding, where I had been standing for 15 or 20 minutes, and was attached behind engine No. 497, which was standing just ahead of the junction points at Maryhill West junction. The proper signal was lowered for me to come out. I had no communication with the signalman, but I knew what I was meant to do, as it is a usual thing for the two ballast engines to be attached in this manner to go away to Cowlairst behind the passenger train. Sometimes also these engines are put on to the front of a goods train, if there is one there. Sometimes this is done by bringing the goods train forward to the engines, and sometimes by backing the engines to the goods train. I never remember a previous case of the goods train being brought forward when a passenger train has been

standing at the platform. Before I came out of the siding I could see the two side-lamps on the passenger train, and when I got on to the main line I could see the red tail-light on the other engine. As I was passing the signal-box the signalman told me that he was going to send "that other fellow" forward with us, meaning the goods train, so that I knew that the goods train was coming forward. I had a red tail-light on, burning properly. The first warning I had of the impending collision was from some of the groundmen, who shouted out, "That fellow is going to be into us." I sounded my brake whistle, and then I looked round to see if the Circle train had started, so that I might move forward to ease the collision. I saw it had not started. I then looked back and saw the steam from the goods engine a few yards away. The engine steamed right into us, and I think it was in fore gear. I heard no whistle from it. I cannot give any estimate of the speed of the goods train. I had no time to jump off. I was knocked back, but was not hurt. The tender was a good deal damaged. I did not notice the state of the signals ahead. My fireman was off the engine to do the coupling. I was stunned for a bit, but have not been off work. I did not see the driver of the goods train until an hour afterwards. He came off his engine and came to speak to me. I said it was a bad job, and he said it was. I said there was a good deal of damage done to the two engines, and he said there was. That was all that passed between us. He seemed excited, but I cannot say whether from the effects of the collision or not. There was a little snow falling at the time.

John Hayes states: I have been nearly 10 years in the service and about nine years a fireman. On the 20th January I was fireman to Alexander Gartshore. I was off the engine when the collision took place at the rear of my tender ready to couple on the goods engine. I saw it coming, and it was coming too fast, and I got out of the way. It was steaming at the time. Steam was not shut off, and the engine must have been in fore-gear. I first saw the head-light of the engine. I cannot say how far it was off. It was a very dark night, and it had been snowing. I do not think snow was falling at the moment, but I cannot be certain. I did not speak to the driver of the goods train. I saw him on his engine. My tail-lamp was burning brightly. I did not see the position of the starting-signal.

David Morgan states: I have been about eight years in the service, first as a fireman, and for the last three months as a goods guard. On the 20th January I was guard of the 12.20 up goods train from Helensburgh to Kipps. It is a pick-up train. We started from Helensburgh at 2.50 p.m., having been late in arriving from Kipps with the train which left at 5 a.m., and was due at Helensburgh at 11.50. We had work to do at four stations before getting to Maryhill. We were stopped at Knightswood North junction for about five minutes, and started at 5.32. I did not know whether the driver was cautioned or not, but we came to a stand at Maryhill West junction up home-signal. We stood there for 10 or 11 minutes. As soon as we had stopped I went to see the yardman to find out if there was anything to lift. He told me there was not unless we were shunted into the yard. I told this to my driver. I then went forward and told the signalman that we wanted to go right away if the road was clear. After this the signalman brought two light engines up behind the passenger train which was standing in the station. He then told me that he would draw up my train and couple it on behind the engine, but he gave me no orders what to do. He lowered the signal and my train came forward. I remained on the platform close to the signal-box. I saw when my train was about half-way across the viaduct that it was coming too fast, seeing there was a train standing in the station. I therefore jumped into the 4-foot and showed a red light towards the train. I kept doing

so until the engine was close on to me. I did not see any red light shown by the signalman until after the collision occurred. He might have done so without my seeing him. I cannot say at what speed the train was running when it struck the light engine. I think I might have caught up the van running. I shouted when the engine was 10 or 12 yards away and steam was then shut off. I heard the engine reversed and steam applied. That was all done after I shouted. I did not speak to my driver that night after the collision. I "spoke up" on to the engine, and it was the fireman who answered me. The last time I spoke to the driver was when I came from the yard. He then spoke to me over the side of his engine. He was in the same state as he had been all the day, quite fit for work; not drunk that I could see. I did not notice the position of the starting-signal. It was snowing at the time. I came on duty at 4 a.m., and my train was due back at Kipps at 3.45. It is pretty often late; I have never been off duty at 3.45 yet. I saw the red tail-lights on the passenger train all the way from the home-signal. I did not notice whether a tail-light was burning in the light engine when the collision took place. My train consisted of engine and tender, nine empties, one loaded waggon, and one van.

James Brackenridge states: I have been about a fortnight in the service. I was assistant guard of the goods train. I know nothing of what happened before the collision. I was in my van and was knocked down and broke my collar-bone. The last place I saw my driver was at Cardross. I was there about 10 or 15 yards from him. I did not think he was the worse for liquor. I was not near enough to smell him, but he seemed straight enough and doing his duty all right.

Samuel Taylor states: I have been about 10 years in the service and three years and nine months a driver. On the 20th January I came on duty at Kipps at 3.45 a.m. My booked time to be off duty is 3.45 p.m. My engine, No. 283, is a six-wheeled coupled goods engine with a six-wheeled tender, fitted with a steam-brake working blocks on the six engine wheels. There was also the usual tender brake. We left Kipps at 5 a.m., and were late on getting to Helensburgh, having a lot of work to do on the road. We did not leave Helensburgh on the return journey until 2.50 p.m., 2½ hours late. We had work to do at four stations, the last being Bowling. We were stopped at Knightswood North up-signals, and stood there for five minutes. We were at the advance-signal, and it was lowered for me. I did not get any caution on passing the signal-box. The next signals were the Maryhill West junction signals. These were at danger, and I came to a stand at the home-signal. I stood there for some minutes. My guard went and made inquiries, and told me that he had nothing to lift. He then went to the signalman to tell him this. Shortly afterwards the home-signal was lowered and I started. I knew my guard was forward. I came forward at a speed of six or seven miles an hour with steam on. Seeing the starting-signal off, and also the distant from Maryhill East junction, I understood that the signals were right for me to go right away. I did not know anything about the light engines being on the line in front of me until I heard a shout. I was then only about three engine-lengths away from the light engines, and although I did everything I could to stop by shutting off steam, reversing my engine, applying back steam, and putting on the steam-brake, I could not stop, and struck the light engine. I cannot estimate the speed, but I had reduced somewhat, and the waggons were all closed up. There was no time to apply the tender-brake. I was knocked over and hurt, and so was my fireman. It was snowing at the time. After we struck I looked at the signal-box and saw a red light shown by the signalman. That was the first and only red light which I saw. I am not in the habit of driving

regularly on that line, but I know the road well. I have never before been brought forward to couple on to light engines in this manner. My train is booked to stop at Maryhill. I know Rule 301, but I took the message from the yard as sufficient authority for me to run past the station without any further signal except the fixed-signals. I had no warning from anyone of the irregular working at Maryhill.

James Goldie states: I have been seven months in the service. I am a porter at Maryhill. I was in charge of the platform when the 5.50 p.m. passenger train was ready to start. I told the guard that it was right, went into the office with a letter, and just as I came out the collision took place. I did not notice whether the starting-signal was off or not. I saw the driver of the goods train about 1½ hours after the accident. There was nothing the matter with him then.

John Murray states: I have been over five years in the service, and four years a signalman. I was in the signal-box at Maryhill when the collision took place on the 20th January. I was coming to relieve Ketchin. When the goods train was about half-way across the viaduct, Ketchin called my attention to it. He said, "What is this coming now?" He then went and showed a red light when the engine was about 100 yards away. The home-signal had been lowered for the goods train to come forward, but the starting-signal was not lowered until about three minutes after the collision. I pulled it off myself. I am certain that the starting-signal had not been lowered and then put back by Ketchin. I did not leave the signal-box after the accident.

George Cunningham states: I am district superintendent of the North British Railway at Glasgow. On the 20th January I arrived at the scene of the accident at 7.10. I saw the driver of the goods train. I sent for him and saw him in the waiting room in the presence of several others. He was very much the worse for drink. I judged from his appearance, and from the manner in which he answered my questions, and the indifference he showed to what had happened. There was no excitement about him at all, and what I observed could not have been from the effects of the accident.

Thomas Scott states: I have been 42 years in the service. I am locomotive foreman at Cowairs. I arrived at Maryhill at about 7.15 on the 20th January. I saw the driver of the goods train on his engine. He was under the influence of drink. I have no doubt whatever about it. I judged from his general appearance. I asked him how the thing happened, and from the look which he gave me I was sure he was under the influence of drink. He also smelt strongly of drink.

William Bett, signalman, Knightswood North junction, states: I am 24 years of age, and have been over four years in the service of the north British Railway Company, 12 months as porter and three years as signalman. I have been signalman at Knightswood North junction since 1st June last. I was on duty on 20th January 1890 when the 12.20 p.m. goods train from Helensburgh to Kipps came up. All my signals were against it owing to the section ahead being occupied by the 4.5 p.m. goods train from Balloch. The 12.20 p.m. goods train from Helensburgh approached Knightswood North junction at 5.30 p.m., and knowing that the passenger train from Milngavie for Glasgow was following closely from Milngavie junction, in order to clear my junction and allow the passenger train to pass, I dropped my home-signal when the goods train was all but at a stand, and also, to the best of my recollection, shouted out at the pitch of my voice to the driver as he was slowly passing my cabin

the words "Junction blocked," at the same time showing him a green hand-lamp, which he appeared to understand, as in answer thereto he gave a short whistle. This was before the train was accepted by

Maryhill, and as a matter of fact it was accepted at 5.35 p.m. on the section clear and junction blocked signal, which signal I duly recorded in my book at the time.

Conclusion.

From the foregoing evidence it appears that at 5.35 p.m. the Circle passenger train, due to arrive at Maryhill at 5.34 p.m., and to leave again at 5.50 p.m., arrived at the up platform, and came to a stand at the usual place; that at 5.46 p.m. the signalman in Maryhill West cabin brought forward a light engine off the Stobcross branch, and immediately afterwards another light engine from a siding on the Helensburgh line, which two engines were then coupled together and stood about four yards behind the passenger train; and that at 5.48 p.m. the signalman lowered the up Helensburgh line home-signal for the 12.20 p.m. up goods train from Helensburgh, which had been standing at the signal for about nine minutes, to come forward to be attached to the two light engines, so that the whole of them might go forward together to Cowlaers after the passenger train had gone away.

The driver of the goods train, although the tail-light on the hindermost light engine was burning, and a red hand-lamp was shown towards him from the signal-box, and another one by his guard, who had gone forward to the signal-box, did not, by his own admission, make any attempt to stop his train until he was within 35 yards of the light engines, while according to other evidence he kept his steam on until he was on the point of striking them. His train must still have been running at about five miles an hour when the collision occurred.

The driver states that he did not see any red light or any obstruction on the line until he was warned by a shout from his guard, and further that seeing the starting-signal and the distant-signal from Maryhill East off, he thought that they had been lowered for him, and that he had the line clear for him to go right away.

The evidence as to the position of these signals is most conflicting, for the signalman and his relief man, who was in the box at the time, are quite positive that the collision took place at 5.49, before the starting-signal had been lowered for the passenger train to start at 5.50, while the driver and guard of the passenger train are equally positive that it was lowered, and that the collision did not take place until 5.50, after the signal for the train to start had been given by the guard, and in this respect they corroborate the driver of the goods train.

The collision was brought about by an irregularity in working under the block regulations, for while the passenger train was standing at the platform between the home and starting signals, the signalman had no right to lower his home-signal as he did, to bring forward both the first light engine and the goods train.

Under no circumstances should he have done so, and even if he had been justified in acting as he did to expedite traffic, it was exceedingly careless not to let the driver of the goods train know what he was going to do before lowering the signal for him.

Still no collision would have occurred if the driver of the goods train had kept a proper look out, for if he had done so he could not have failed to see the red lights ahead of him, which his guard states to have been visible to him when coming forward to the signal-box for the whole way from the home-signal.

As regards the starting signal, I believe that it was off, and no doubt this was a misleading signal for the goods driver, but from the evidence I cannot avoid the conclusion that it is to the fact that this man was the worse for drink that his carelessness must be attributed. His fireman, who did not appear to give evidence was also to blame.

There is another point which, although it really had nothing to do with the collision, should be alluded to. The goods train was accepted on the "Section clear but station blocked" signal, under which conditions the driver should have been stopped and verbally cautioned at Knightswood North junction cabin. The driver denies that he was cautioned, and the signalman at Knightswood North junction, while stating that he showed a green light and called out to the driver, seems a little doubtful about it, admitting moreover that the train did not come to a stand at his signal-box, but went forward past it to the advance-signal 400 yards ahead before he had received the block signal in question from Maryhill.

Under the rules the driver, when the home-signal at Knightswood North junction was lowered for him, the starting-signal being still at danger, should have stopped as soon as the last vehicle of his train was clear of the junction, when he would have been within hail of the signal-box.

The fact is that, from what I have recently observed, I believe that this "Section clear but station blocked" signal is being used at many places in a manner which was never intended, and which in my opinion is unsafe. When signalmen have trains standing at their home-signals, and cannot get "Line clear" from the signal-cabin ahead, they send the train forward to the advance-signal, and, on the assumption that the block-signal which they will receive will be the "Section clear but station blocked" signal, they call out to the drivers on passing the cabin that when the signal is lowered they are to go forward at caution. This block signal is a necessary one for stations where trains have to connect, but the regulations as to its use, viz., that trains are to be *stopped*, and the driver verbally cautioned, should be strictly adhered to, and it should not be used, as it certainly often is, in a manner which introduces what is nothing more or less than a system of permissive block working.

The signalman had at the time of the collision been on duty for nearly 12 hours, and the driver and fireman of the goods train for 13 hours, with a prospect of some two hours more.

The usual hours of these latter men, and of the goods guard, appear from the evidence to be far too long, for, although nominally they are 12 hours, they are actually much longer.

The hours of the drivers of the ballast engines, viz., 13 hours, are also excessive,
I have, &c.,

The Assistant Secretary,
Railway Department, Board of Trade.

F. A. MARINDIN,
Major, R.E.

APPENDIX.

COLLISION at MARYHILL on January 30th, 1890.

STATEMENT OF DAMAGE to PLANT.

North British goods engine, No. 10.—Tender frame, tank, &c., damaged.

North British goods engine, No. 283.—Buffer-beam, framing, &c., damaged.

North British goods engine, No. 497.—Buffers damaged.

North British First-class carriage, No. 374.—Corner and end pillars, end quarters, end bar and bottom damaged, buffer-castings broken, buffer-rods, lamp iron and side chains damaged, body-glasses broken, bearing springs and Westinghouse hose-pipes damaged, axle-boxes broken.

North British First-class carriage, No. 167.—End panels, end framing, step-boards and step-hangers damaged.

North British Third-class carriage, No. 67.—Buffer-castings, body-glasses and axle-boxes broken.

North British Third-class carriage, No. 41.—Screw couplings and brake cylinders broken.

North British Third-class brake-carriage, No. 752.—Buffer castings, axle-boxes, end-glasses, and body-glasses broken.

North British Third-class brake-carriage, No. 29.—End and body glasses, buffer-castings, screw-couplings, and brake-cylinders broken.

North British waggon, No. 35,905.—Guard-planks bent and axle-box broken.

North British waggon, No. 35,932.—Trams and axle-boxes destroyed, guard-plates bent.

North British waggon, No. 35,926.—Tram and guard-plate damaged.

North British waggon, No. 35,909.—Tram and guard-plates damaged.

North British waggon, No. 42,699.—Guard-plates damaged.

North British goods brake-van, No. 166.—Buffer-sockets and corner pillars damaged.

Printed copies of the above report were sent to the Company on the 26th March.

NORTH BRITISH RAILWAY.

Board of Trade, (Railway Department),
Whitehall, London, S.W.,

8th March 1890.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 28th January, the result of my enquiry into the causes of a collision which occurred on the 25th January at Burnmouth station, on the North British Railway.

In this case the 5.30 p.m. down passenger train from Berwick (consisting of engine and tender, three third-class, two second-class, and two first-class carriages, and two brake-vans) which had left Berwick north advance starting-signal at 5.47 p.m., overran the signals and the platform at Burnmouth at 5.58 p.m., and came into collision with the engine of the 7 a.m. up goods train from Sighthill to Tweedmouth,

which had arrived at Burnmouth at 5.37 p.m., and which, having completed some shunting operations, was upon the down line, 84 yards north of Burnmouth down home-signal, and moving forward with nine waggons attached to cross on to the up line.

The goods engine was driven back for 31 yards, two waggons remaining attached to it were thrown foul of the up line, and the other seven waggons which broke away were driven back for 290 yards. No vehicle in the passenger train left the rails, but the front of the engine was very much damaged, and the leading end of the front carriage was telescoped.

Ten passengers are returned as having been injured; one who was riding on the engine being so badly burnt that he died within a short time. The driver and fireman were also very badly burnt and scalded, and died seven days and nine days respectively after the collision. The guard of the passenger train was seriously injured, and the fireman of the goods train hurt his leg when jumping off his engine.

A return of the damages to the rolling-stock is given in the Appendix.

This report has been delayed on account of the guard of the train being too ill to give his evidence until more than five weeks after the date of the accident.

Description.

Burnmouth is the next station north of Berwick and about $5\frac{1}{2}$ miles distant from it.

It is an ordinary roadside station with up and down platforms, and with sidings upon both sides of the line north of the station.

The signal-box is on the east side of the line north of the station, and there is a main line cross-over road exactly opposite to the cabin.

There are distant and home signals in both directions, the down home being on the proper side of the line near the north end of the down platform, and the down distant being 713 yards south of the home-signal.

The line immediately south of the station is in a rock-cutting, and there is a road-bridge over the line close to the station buildings, which are on the down side of the line.

The line through the station is upon an easy curve to the west, and is level, but the approach from the south is upon a rising gradient of 1 in 400 for 1,580 yards.

The down home-signal first comes into sight from an approaching engine at a distance of about 292 yards; it remains visible for about 144 yards; is then shut out by the over-bridge for about 48 yards, and is then visible for the remaining distance of 100 yards.

There is a very good view of the down distant-signal.

The point of collision was about five yards north of the trailing-points of the cross-over road on the down line.

The following distances southwards from the point of collision should be noted:—

To signal cabin	-	-	-	-	-	-	-	28 yards.
To down home-signal	-	-	-	-	-	-	-	84 "
To north end of down platform	-	-	-	-	-	-	-	100 "
To over-bridge	-	-	-	-	-	-	-	165 "
To down distant-signal	-	-	-	-	-	-	-	797 "

The points and signals are interlocked, and the line is worked upon the block system. There is no block signal-cabin between Burnmouth and Berwick.

Evidence taken on January 29th.

Henry Clarke states: I have been 10 years in the service, and a signalman for nearly seven years at Burnmouth. On the 25th instant, I came on duty at 5.30 p.m. for 12 hours. Absolute block working is in force between my signal-box and the boxes in both directions. The next box south is at Berwick, $5\frac{1}{2}$ miles away. There are no special regulations for working between Berwick and Burnmouth. At 5.37 p.m. an up slow goods train arrived. It had to put off one waggon and lift another from the down side sidings. I shunted into the up siding all the waggons except those which had to go through the road with the engine. The engine with nine waggons came out on to the up line and stood until the down express passed at 5.47 p.m. I put my down signals back to danger. I then cleared back for the express

to Berwick, and I then got the "Be ready" signal for the down slow train—the 5.30 from Berwick. I gave the "Section clear, but station blocked" signal back to Berwick at 5.47. This signal was repeated from Berwick in the proper manner at 5.47. I then opened the cross-over road points, and the goods engine with waggons attached was crossed on to the down line. The one waggon was dropped and the other one taken out from the down siding, and at 5.57 the engine and nine waggons were standing on the down line again. I had put the cross-over road points back as soon as I had crossed the engine and waggons the first time, and at 5.57 I opened the points again, and hand-signalled the engine to come alone on to the up line. My down signals were standing at danger the whole time. Just as I had

given the hand-signal, I saw the engine of the passenger train flash past my window, and the next thing I heard was the crash of the collision. It was a very violent one. I had not heard the passenger train approaching, or any whistling. I think the passenger train was running more like a train which has to pass through the station without stopping than anything else. It was due to stop at the station at 5.42. It was due to leave Berwick at 5.30, so that I considered it was 17 minutes late. The collision took place at 5.58 p.m. My down home-signal light was burning brightly both before and after the collision. My down distant-signal lamp was burning brightly when I had the signal off for the down express. I could not see the green back light after I put it back to danger. I did not try the signal by lowering it after the accident. The porter who went back to protect the train told me that it was burning properly. I am allowed to continue shunting operations after any train has been taken on with the "Section clear, but station blocked" signal, whether it is a fast train or a slow one. It was a very stormy night, blowing a gale and raining. I did not leave my box. I cannot speak as to the position of the engines after the collision. Both lines were blocked. The express passed at 5.47. "Be ready" for a slow passenger train is four bells and four beats, with the needle to the right. "Section clear, but station blocked" signal is 13 beats of the bell, and each signal has to be repeated as acknowledgment. No entering section signal is given with the latter signal, as it is when the ordinary "Line clear" signal is given.

Robert White states: I have been over five years in the service, and a signalman for three years and seven months, all the time at Berwick. On the 25th instant, I came on duty at 6.30 a.m. for 12 hours in Berwick north box. The 10 a.m. down express from London left at 5.35, 22 minutes late. It was cleared from Burnmouth at 5.47. I then offered the 5.30 down train which was standing at the down advance-signal, having left the station at 5.43. I at once got back the "Section clear, but station blocked" signal, which I acknowledged by repeating it. I then lowered my advance-signal, and the passenger train went away. When the 5.30 train had started from the station upon my lowering the starting-signal for it, the driver came very slowly, as the home or intermediate signal and the advance-signal were against him. The home-signal is about 100 yards north of my box. The driver came almost to a stand, and I gave him a verbal caution as he passed me that he was to go forward at caution as soon as the down express had been cleared. After I had cautioned him I lowered the home-signal to let the driver go forward to the advance-signal, where he stood for about a minute or two. Either the driver or the fireman said "All right" when I gave the caution verbally and by green hand-light. I cautioned the driver because I felt sure that the "Section clear, but station blocked" signal would be the one which I would receive from Burnmouth, because I knew that the up slow goods train would be shunting there. This train always has work to do at Burnmouth, and whenever it has been at Burnmouth the 5.30 has gone away with the same signal. There are a good number of trains which go forward with that signal, mostly slow trains. I saw the driver and the fireman as the engine passed my box. One of them had his hand over the weather-board on the right side, and it was he who acknowledged my signal. The other man was on the footplate doing nothing. I saw no one else on the engine. I am sure of this. At about 5.30 or 5.35 I had inquired from the signalman at Ayton by speaking telegraph where the slow goods was. He told me it was just ready to leave Ayton. The up fast goods, which passed the slow goods when shunting at Burnmouth, was telegraphed to me from Grantshouse at 5.20, and given on to me from Burnmouth at 5.47. I had accepted it at caution. It arrived at 6 p.m.

Robert Kean states: I am station-master at Burnmouth, where I have been for nearly seven years. I have been 15 years in the service. On the 25th instant I was in the office when the down express passed. I was on my way from the office to the down platform when the 5.30 down train passed. I saw it plainly. It was running fast, at 30 miles an hour I should think. I knew there must be a collision as the goods train was on the down line. I cannot say whether steam was on upon the passenger engine or not. I heard no whistling. I saw by the fire from the wheels of the carriages that the brake was hard on. I saw this when the carriages were opposite to the middle of this platform. The fences prevented me from seeing the wheels before the carriages had arrived at that point. I saw no fire from the engine or tender wheels when they were passing that point, or from the front carriage wheels. Immediately the train passed I ran after it, but had not got above a few yards when I heard the crash of the collision, which was a very violent one. I went on to the engine. None of the passenger train had left the rails, but the engine was very much damaged in front. The men on the footplate were on the floor half covered up with coal. The fireman was off the footplate before I got there. I pulled up the driver, and then a passenger who was under him, and shouted for assistance. The first man who came was porter Tait. The fire-box door was open, and both men, as well as the fireman, were badly burnt. The driver was not senseless, but the other man was unconscious. I asked the driver how the accident had happened and he said he had made a "terrible mistake." I understood him to mean that he had miscalculated his position. I did not mention the signals. The down home-signal was at danger. I cannot speak as to the distant-signal light, at that time. When I passed it between 9 and 10 o'clock the lamp was burning brightly. In the passenger train the leading carriage had the leading end driven in. There were no passengers in it. Three passengers complained to me of injury. One of them, a young woman, had a bad blow on the head. There were very few passengers. The goods train engine was driven ahead for about 30 yards, and seven of the waggons broke away and ran for a considerable distance. There were two remaining attached to the engine, and they were foul of the up line. The driver of the passenger train, who works regularly on this part of the line, has never overrun the station before to my knowledge. I have never before seen any unauthorised person on his engine, or on any other engine passing Burnmouth. The passenger, who has since died, lives at Preston. His name is Robert Hogg, and I believe he is a rabbit catcher by profession. I do not know whether he had a ticket. I did not see the driver, fireman, or guards of the goods train until a quarter of an hour after the collision; after the men upon the passenger engine had been released. I did not look to see if the passenger engine was reversed. The driver was very much excited, but could speak quite coherently. The guard was injured, so I sent back porter Tait to protect the train, as soon as he had carried the injured man to the office. There was a doctor in the train. I did not see the fireman for an hour after the collision.

Thomas Tait states: I have been five years in the service as porter at Burnmouth. On the 25th instant I was on the down platform when the 5.30 train passed. It was running fast, like a train which has not got to stop. I heard no whistling. I cannot say whether steam was on or not. After half the train had passed the north end of the platform I noticed fire flying from the wheels of the carriages; all of those that I could see. The front carriage wheels were hidden from me. I had first looked to see if the home-signal was at danger, and as soon as I looked at the carriage wheels I saw the fire flying. The train did not seem to lose any way until it struck the goods engine. I at once ran after the train and got to the

engine about the same time as the station-master, and assisted him to release the men on the footplate. The fireman was off the footplate before I got there, and I did not see him at all. I carried the injured man Hogg down to the office, and then the station-master sent me away to protect the train, as the guard was injured. I went back towards Berwick about 10 minutes or a quarter of an hour after the accident, and put fog signals on the line about 200 yards outside the distant-signal. I looked at the signal lamps as I went back, and both the home and distant signal lights were burning brightly. They were both at danger.

Robert Rogers states: I have been 24 years in the service, and a goods driver for 14 years. On the 25th instant I came on duty at 6 a.m. I took the 7 a.m. goods train from Sighthill to Tweedmouth, where I was due at 6 p.m. It was a pick-up train, and I had work to do at most stations. The account given of the operations at Burnmouth by the signalman is correct. When I got the hand-signal from him to come across on to the up line I started forward and was about 10 yards from the cross-over road points, when my guard, who had been attending to the shunting and was on the sidings a little in front of the engine, shouted out to me to jump. The fireman said "Look out! jump!" I shut off steam and reversed my engine before I jumped. I saw the head-light of the passenger train engine about opposite to the home-signal just as my fireman called to me to jump. The fireman saw it first. Both my fireman and I jumped off on the 6-ft. side, just before my engine was struck. I was not hurt, but my fireman's leg was injured. My engine was driven back some distance, and the two waggons attached to it were foul of the up line, and seven other waggons broke away, and ran back for a considerable distance. I went at once to my engine to attend to it. While I was doing so someone came to call me to assist someone off the passenger engine. I went back, and found porter Tait there. He was trying to get an injured man off the footplate, and I assisted him. I did not see the station-master there. I then went back and drew the fire of my engine. My engine was badly damaged. I saw the driver of the passenger engine when I was helping porter Tait. He was on the ground by the engine. He asked me to draw his fire, and I did so after I had looked after my own engine. That was all that passed between

us. I did not see the fireman. It was blowing a gale and was a very coarse night. The down home-signal was at danger. I did not see the down distant-signal. I cannot form any idea as to the speed at which the passenger train was running when it struck my engine. The 1.20 p.m. up goods train from Sighthill passed on the up line while I was on the down line. The head-light on my engine had been changed to show red while we were shunting, but I turned it from red to green when about to cross from the down to the up line so as to let the signalman know what class of train it was.

James Gibson states: I have been 18 years in the service as goods guard. On the 25th instant I came on duty at 6.30 a.m., and was working through the day with driver Rogers. I have heard his evidence read over and agree with it. I was attending to the waggons and was at the third behind the engine. I had no warning of the collision. I had just finished coupling and had done so with a pole. First I thought the engine had burst, and I went forward to see what had happened. I went first to look at our train engine, and then to the passenger engine. I found porter Tait and my driver helping a man off the footplate. The station-master was up on the footplate. I saw the driver of the passenger engine about an hour afterwards. He said that he was badly scalded. I understood him to say that he had never seen the distant-signal. That was all he said.

Frank Renwick states: I have been six years in the service and four years a goods guard. On the 25th instant I came on duty at 6.30 a.m. I was working all day as assistant to guard Gibson. I have heard my driver's evidence read over, and it is correct so far as I know. When I called out to him the engine of the passenger train was close to the home-signal. Steam was shut off. I stood back out of the way. I heard no whistling. As soon as I saw the engine I saw fire flying from the wheels of the carriages. I cannot give an estimate of the speed at which the passenger train was running when the collision took place. It was checking a little I think, but it was running fast. After the collision I spoke to one or two of the passengers, and then went to the guard's van of the passenger train to assist the guard, who was badly cut on the face. He said nothing to me about the brakes.

Evidence taken on March 3rd.

Alexander Aitken states: I have been 27 years in the service, and station-master at Berwick for 12 years and seven months. I was on duty on the 25th January. The down 10 a.m. express train from London left a few minutes after time. The 5.30 p.m. slow train from Berwick to Edinburgh, which follows the 10 a.m. train, was brought to the down platform after the latter had started, and followed it at about 5.40. I have known the driver (Joseph Cunningham) for four or five years. I have always considered him a very steady "anxious" man. I saw him on his engine, and spoke to him, ordering him to move his train forward for a few yards. He was quite fit for duty, and there was not the slightest sign of liquor on him. I saw his fireman also (Alexander Thompson), and he also was quite fit for duty. There was no one else visible upon the engine while it was at the platform. The starting-signal was lowered after the driver had sounded his whistle. For all I knew it was going right away, but I heard afterwards that it had been stopped at the advance starting-signal. I heard from the signalman that it had gone forward with the caution signal. There are not a great number of trains which go forward with that signal—not more than two or three in the day. There are far more which come in with that signal. If there were an intermediate block-signal cabin there need not be any. I am obliged to get the trains out of the station as the

accommodation is so scanty. There are only the two passenger lines, no dock sidings, and not sufficient siding accommodation. I do not know the man who was killed, by sight. I have never had occasion to check this driver or any other driver for having an unauthorised person upon his engine.

James Niven states: I have been about 14 or 15 years in the service, and a passenger guard for 12 years. On the 25th January I came on duty at 1.30 p.m. and worked a train to Berwick, arriving at 4.15. I was guard of the 5.30 p.m. down slow train from Berwick to Edinburgh. It was made up as follows: Engine and tender, running engine first, three third-class, two second-class, and two first-class carriages, and two brake-vans. I was in the rear van but one. The train was fitted with the Westinghouse brake throughout. After the down express had started my train was brought to the platform, and when it was ready to start at 5.45, my driver sounded his whistle and we started. I did not know at that time but what we were passing right away. I do not know whether my driver was cautioned at the signal-box, but we were stopped at the advance-signal. We stood there for two minutes and then proceeded. It was a terrible windy night, but I noticed nothing unusual in the speed of the train between Berwick and Burnmouth. I did not see the Burnmouth

distant-signal that night, although I was looking ahead out of my side windows. I saw the home-signal, but not until my van was at the over-bridge. The train was then running faster than a train should run if it has to stop at the stations. The brake was just at that time applied hard for the first time, but the collision occurred very soon afterwards. The train was running 20 or 30 miles an hour when the collision took place. I got out, but was too much hurt to do anything. I have known the driver on and off for some

years, and think he was a steady man. I did not see him that evening to speak to before we started. I had no idea that there was any unauthorised person on the engine. I have never known him to have one there before. As I was lying on the ground after the accident the driver said that it was all his fault, and that he had missed the signal. It was such a rough night that I myself did not know exactly where we were. If I had I might of course have applied the brake sooner. I am still too ill to work.

Conclusion.

From the foregoing evidence it appears that the down express which left Berwick at 5.35 p.m. 22 minutes late, passed Burnmouth at 5.47 p.m.: that the signalman at Burnmouth then accepted under the "Section clear, but station blocked" or caution signal, the 5.30 p.m. down slow passenger train; that he then crossed on to the down line the engine and nine waggons of an up slow goods train which had arrived at 5.37 p.m., and the remaining part of which had been placed upon the up siding; and that this engine, having completed shunting operations, was just about to cross with nine waggons on to the up line again, when it was struck by the engine of the 5.30 p.m. down train which was running at considerable speed. The collision, which occurred at 5.58 p.m., was a very violent one, the speed of the passenger train being probably at least 20 miles an hour. The 5.30 p.m. train had left Berwick platform at 5.43 p.m., and had been stopped for two or three minutes at the advance starting-signal, which was lowered for it to proceed at 5.47 p.m. The driver was, according to the evidence of the signalman, warned when he passed the signal-box, that, when the signal was lowered, he would have to proceed under the caution-signal, the signalman having anticipated that that would be the block-signal, which he would receive after the down express had been cleared from Burnmouth, but in any case the train had to stop at Burnmouth. Owing to the sad fatalities which resulted from this collision, both the driver and the fireman, and a third person on the engine, having died, and the guard having been very badly hurt, the evidence as to the cause of the collision is to some extent circumstantial.

It is, however, quite certain that both the down home and the down distant signals were at danger, and that the lights in the lamps of these signals were burning, and, judging from the evidence of the guard, the train approached Burnmouth at high speed, the continuous-brake not being applied until the engine was within 70 yards of the point of collision.

Although the application was too late to avert the collision, the brake did excellent service in preventing the telescoping which would otherwise have resulted from such a violent collision.

The driver, after the collision, stated that he had made a "terrible mistake," and also that he had "missed the signal."

It is therefore pretty clear that he alone was responsible for the accident, having apparently missed seeing the distant-signal altogether, and being quite unaware of the position of his train.

It was a very wild, windy night, which may to some extent account for the mistake; but I fear that this mistake must be principally attributed to the presence of an unauthorised person upon the engine preventing the driver from paying proper attention to his duties.

There is no evidence to show when this person got on to the engine, but he cannot have been there without the knowledge of the driver, who, by permitting him to be there, acted in contravention to the rules of the Company.

At the time of the accident the driver had been on duty for 10 $\frac{3}{4}$ hours, his regular hours for this day being over 13 hours, which are far too many.

The head-light on the engine of the goods train had been properly changed to show a red light when this engine went across on to the down line, but the driver had changed it back to show green before the collision took place. I do not think that his doing so contributed in any way to the accident, but according to the rules the light should not have been changed until the engine was on its proper line. This driver had at the time been on duty for nearly 12 hours.

Under the rules the signalman at Burnmouth was justified in shunting the goods train engine on to the down line after accepting the 5.30 p.m. down goods train from Berwick, under the "Section clear, but station blocked" signal, although in doing so he obstructed the down line only 85 yards beyond the down home-signal.

I have recently called attention, when reporting upon a collision at Maryhill on the North British Railway, to the danger which, in my opinion, arises from the use of this block-signal in a manner which was not, I believe, contemplated when it was first brought into use. It is a signal which is very necessary for working stations where trains have to be connected, but, as this fatal collision plainly shows, it is not safe to use it, as it is habitually used on this portion of the North British line, whereby a system of working is introduced, which cannot properly be called "absolute" block-working.

No doubt there is great inconvenience in working with block sections as long as $5\frac{1}{2}$ miles, but the remedy is easy, and I trust that the Company will lose no time in taking the necessary steps to divide this long block section between Berwick and Burnmouth into two, which will make it quite unnecessary to continue shunting operations at Burnmouth when a train is approaching the station.

It appears also that, owing to the insufficient accommodation at Berwick, trains have to be sent forward to the advance-signal before being accepted from Burnmouth, which is of course likely to lead to mistakes when the block-signal received is the "Section clear, but station blocked" signal, and which, moreover, is not strictly in accordance with the rules for working under this signal.

It is to be hoped that the station arrangements at Berwick may be improved, and I would also recommend the Company to alter the position of the down home-signal at Burnmouth, so that it may cover the platform, and be more easily seen from an approaching down train.

The Assistant Secretary,
Railway Department, Board of Trade.

I have, &c.,
F. A. MARINDIN,
Major, R.E.

APPENDIX.

COLLISION at BURNMOUTH, 25th JANUARY 1890.

PARTICULARS of DAMAGE to PLANT.

North British passenger engine, No. 164.—Buffers, buffer-beam, angle-iron on front end of frames broken; front end of both frames spread outwards; outside angle-iron frames, footplate, sand-boxes, cylinders driven seven inches towards motion-plate of flange for attaching to tube-plate broken; projection of tube-plate below boiler broken away; both cylinder covers and steam-chest cover broken; motion-plate bent and broken; left-hand inside connecting rod-broken; rail-guards and sand-pipes twisted and broken; smoke-box front and door driven in and twisted.

North British engine tender, No. 164.—Back buffers, buffer-beam, drag-box frame broken and driven out of their places; left-hand frame at back end driven inwards.

North British goods engine, No. 311.—Front buffer-beam, angle-iron on frame ends, front end of right-hand frame torn away from cylinders; outside angle-iron frame, front splashers, sand-boxes, foot-plate, right-hand cylinder cover, steam-chest cover, left-hand cylinder broken at bottom of steam-chest; rail-guards, brake-rods broken and twisted.

North British engine tender, No. 311.—Tank back-plate stove in and broken; tool-box broken.

North British first-class carriage, No. 498.—Two breast-beams, four buffer-cases, and one side-glass broken.

North British first-class carriage, No. 399.—Two breast-beams, side chain, and four buffer-cases broken.

North British second-class carriage, No. 14.—One breast-beam, three side-glasses, four buffer-cases, and side-chain broken.

North British passenger van, No. 22.—Three buffer-cases and five end-glasses broken.

North British passenger van, No. 150.—Breast-beam, buffer-cases, and end-glasses broken.

North British third-class carriage, No. 906.—Breast-beam, buffer-cases, buffer-rod, and side-chain broken.

North British third-class carriage, No. 642.—Breast-beam and buffer-cases broken.

Great Northern Railway goods waggon, No. 18,121.—Tram outside breasts, longitudinals, sole-rails, end standards, top cleading, and guard-plates broken.

North-Eastern Railway goods waggon, No. 33,193. Tram, outside breast, end standards, top cleading, axle-boxes, and guard plates broken.

Printed copies of the above report were sent to the Company on the 29th March.

CARLISLE (CITADEL) STATION.

COPY OF REPORT

TO THE

BOARD OF TRADE

BY

COLONEL RICH, R.E.,

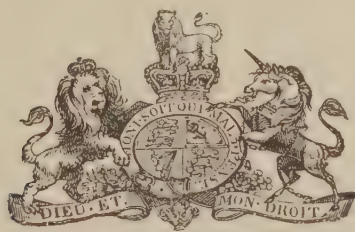
OF HIS

INQUIRY INTO THE CIRCUMSTANCES WHICH ATTENDED THE
ACCIDENT THAT OCCURRED ON THE 4TH MARCH 1890.

AT

CARLISLE (CITADEL) STATION.

Presented to both Houses of Parliament by Command of Her Majesty.



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1890.

CARLISLE (CITADEL) STATION.

Board of Trade, (Railway Department,)
21st April 1890.

SIR,

In compliance with the instructions contained in your minute of the 5th ultimo, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances, which attended the collision, that occurred on the 4th ultimo, at the north end of Carlisle station on the London and North-Western and Caledonian Joint Line.

The engine-driver lost control over the 8.0 p.m. train from Euston as it approached Carlisle, after descending the incline from Shap Summit. The train ran through Carlisle station, and was not stopped until it struck a Caledonian engine, which was moving along the railway to the siding, where it was to wait for the 8.50 p.m. mail train from Euston.

The Caledonian engine was driven forward about a quarter of a mile by the collision.

The London and North-Western engine and tender were damaged; the second carriage, a heavy sleeping-carriage, was telescoped into the leading coach, which was a third-class, and both left the rails, and two other coaches partly left the rails. The leading compartment of the third carriage of the train was also broken in. The damage to the stock and permanent-way, and the Company's rules which apply to Carlisle station and to working the automatic vacuum-brake, are given in the Appendix to the evidence.

Four passengers were killed and 11 were injured, besides the drivers and firemen of both engines.

The train, when it reached Carlisle, consisted of a compound tender-engine, a third-class, a sleeping composite, a saloon, a brake-van in which the conductor was riding, a composite, a sleeping composite, a composite from Bristol, one from Manchester, and one from Liverpool, a third-class with brake compartment, another sleeping-saloon, another composite, and a brake-van at the tail of the train in which the guard was riding.

The vehicles were coupled together in the order in which they are given. The train was fitted throughout with the automatic vacuum-brake which could be applied by the guards, and by the engine-driver in conjunction with or without the steam-brake on the engine.

The vans and the tender were also fitted with screw-brakes.

The London and North-Western Railway Company have of late years adopted at different times several kinds of brakes, which are continuous, or partially so. The last brake the Company tried was the simple vacuum-brake with automatic arrangement in the vans. They have now, and for some time past adopted the automatic vacuum-brake, and have fitted some of their stock with a fiveway cock, to enable them to work their trains with either brake while the change is being effected. This cock is placed under the carriages. It is actuated by a lever-handle in a quadrant, which is placed at the side of the coach, and has three positions, "simple," "cut off," and "automatic." In addition to the names, the latter is marked with a large white A, and it is the carriage examiner's duty, before the train starts, to see that the quadrant-lever is in its proper position for whatever brake is to be used.

The examiner at Euston stated that he had done this on the evening of the 3rd ultimo, but before the train left, his attention was called to the reservoir-gauge in the Gourcock van not acting, after the engine-driver blew up the vacuum. This van was at the time the seventh vehicle from the engine and the fourth from the tail of the train; there was ice on the cylinder, air-pipe, and fiveway cock under the floor of the van, which was caused by the splashed water from the engine water-troughs having frozen, and the assistant examiner proceeded to thaw it, by burning some oiled waste under the fiveway cock and air-pipe. The brake-blocks were not touching the wheels at the time. After the heat was applied for about 1½ minutes the gauge acted, and the train started, but before it reached Tring it was stopped by the Tring signalman, who had received a message from the signalman in North Church cabin, to "stop and examine train." When the train stopped at Tring, the wheels of the Gourcock van were found to be red hot and jammed to the brake-blocks, which could not be got off, so it was arranged to leave the van in the siding at Tring.

As soon as the vacuum-pipe at both ends of the van was detached from the train, the brake-blocks came off. This would happen if the van was worked by simple vacuum, while the rest of the train was worked by automatic vacuum, and I am of opinion that this was the cause of the mischief.

If the small air-pipe which leads from the main air-pipe to the brake cylinder and reservoir through the fiveway cock had frozen, so as to be blocked with ice and keep the brake on, it must have become frozen while the train was stopped for about

two minutes at Willesden, as if it had frozen after leaving Willesden, it would have frozen with the brake off, supposing that this van was working on the automatic principle, and Mr. Eaton, foreman of the locomotive department, who took off the pipe to examine it next day, stated, that he found only about half a teaspoonful of water in the pipe, which would not, if frozen, have been sufficient to block the pipe, and if the pipe had been blocked, the brake would not have come off by the main air-pipe being uncoupled, as the air could not have got to the brake cylinder to relieve it, if it had been blocked with ice.

The train was delayed at Tring about 27 minutes, and then went forward to Rugby with the simple vacuum-brake acting on all the vehicles, as the quadrant-levers had been moved to work "simple," while the train was at Tring, in the hope of releasing the brake on the Gourrock van without detaching it, and it was not thought desirable to lose any more time in altering them again before leaving Tring.

At Rugby the quadrant levers were again altered to work automatic, and the train proceeded on its journey. It stopped at Crewe to change engines, at Wigan to add some coaches, and at Preston, where a bank-engine was placed in front to assist the train up to the summit of Shap, where it again stopped, to put off the bank-engine.

The train was stopped at the proper spot at all these places by the automatic vacuum-brake, which acted well. It reached Shap Summit 28 minutes late and left 33 minutes late.

The driver stated that while running from Shap Summit to Wood Bank, near Carlisle, his gauge showed 21 to 22 inches of vacuum.

The distance is about $28\frac{1}{2}$ miles, and the gradients, except for about $5\frac{1}{2}$ miles midway, where it varies slightly from the level, fall; the inclines varying from 1 in 125 at the steepest part to 1 in 229, of which there is a short piece; the average fall for the 23 miles being about 1 in 157, and the speed of the train, calculated from the times registered by the signalmen, being from about 50 to 64 miles an hour. The driver stated, that he shut off steam at Wood Bank distant-signal, and that at Wood Bank he tested the vacuum, by opening the release-valve on the splashers of his engine, that his gauge fell to zero, but he did not feel the brake take effect, so he blew up his vacuum till the gauge showed 25 inches, and then, by pushing the lever home, he put the steam-brake on the engine, but his vacuum-gauge again fell to zero without his feeling that the automatic vacuum-brake went on the carriages as it should have done, and he ran past Upperby Bridge junction, which is 1,193 yards further than Wood Bank, at a speed of 40 to 50 miles an hour. Before he reached the Carlisle steam sheds, which are about 680 yards further, he said, that he reversed his engine, told his fireman to put on the tender-brake, and applied sand. Just before the close of the coroner's inquest he further said, "When I was trying to create a vacuum, I took the pin out of the slide and pulled the lever right back, so as to keep the steam-brake on the engine and tender, and at the same time create a vacuum." This statement cleared up the confusion which existed up to this time. By doing this, he altered the engine to "simple" vacuum working, and took the brake off all the coaches in the train except the screw-brakes in the front and rear vans, which the guards stated that they put on at Upperby Bridge junction. The train passed No. 5 cabin, which is 1,320 yards at the Carlisle side of the steam sheds, and entered Carlisle station at a speed of 30 to 40 miles an hour. It ran through the station and struck the Caledonian engine about 84 yards north of No. 4 cabin at a speed variously estimated at from 20 to 30 miles an hour. No. 4 cabin is 582 yards beyond No. 5 cabin.

The gradient falls 1 in 130 from Wood Bank to Upperby Bridge junction cabin, which is No. 13, and then to the goods shed cabin, which is No. 12. Between No. 12 and No. 5 cabins, the gradient falls 1 in 118 for 280 yards. The line is then horizontal for 680 yards, and then falls 1 in 110 for the next 280 yards until close up to No. 5 cabin, when it becomes level for 520 yards through Carlisle station, and then falls again 1 in 100 to No. 4 cabin, and to the Caledonian yard at the north side of the station.

The conclusions that I have drawn from the evidence and from what took place are given on pages 24, 25, and 26.

Evidence.

John Downie, conductor, stated: I was conductor on the 8.0 p.m. train from London to the North on March 3rd. It had $11\frac{1}{2}$ vehicles on from Euston. Before leaving that station, when the driver attempted to create the amount of vacuum, he failed to get the proper amount in the Gourrock van. The gauges showed the right amount in my van, which was the fourth vehicle from the engine. Mr. Jupp (the Euston station-master's) assistant went to the carriage inspector, and two or three of his men went and

burned a little oily waste underneath the cylinder of the London and North-Western van, No. 35, which was the Gourrock van. I saw this done. Afterwards the carriage inspector told me it was all right. We left Euston at the proper time, and I went away with the full understanding that the brake was all right. London and North-Western van No. 35 (the Gourrock van) was the fourth vehicle from the rear and the seventh from the engine. We stopped at Willesden. The vacuum-brake was applied for the

stop and acted all right. We were stopped out of course at Tring by signals, in consequence of the vacuum-brake on the London and North-Western van No. 35 being on. There was no person riding in that van. My impression was, that the brake was on owing to the brake cylinder being frozen again, which had been thawed by the carriage people at Euston. We tried in every way to get the brake off the van, but could not do so. We reversed the brake from automatic to simple to effect this, but not succeeding, we had to unload the vehicle and put it off. In order to save time we went on from Tring, working simple vacuum. We had changed the automatic to simple while trying to get the brake off the Gourcock van. The driver before starting from Tring, created about 17 inches of vacuum in the reservoir gauges of my van. The train-pipe gauge showed 0. The van guard gave a white-light signal to indicate that the vacuum was right in his van, and the driver acknowledged this with his lamp. The whistle cord was also tested and acted. When we stopped at Tring I found that the wheels of van No. 35 had been revolving, but had been rubbed by the brake-blocks until the blocks and the tyres were red hot. The driver said he had felt the train dragging from Harrow. We stopped at Bletchley in the ordinary course, and the vacuum-brake acted all right there. I had wired from Tring to Bletchley to be prepared to alter the brake from simple to automatic. On arriving at Bletchley I consulted with the station-master, and seeing we were only allowed a three minutes' stop, we decided to run on to Rugby with the simple vacuum, and to alter it there to automatic, which was done. We stopped at Rugby all right and changed engines there. The fresh engine created the proper amount of vacuum. The gauges showed a little over 17 inches, and I saw the rear guard give the signal. The cord was also tested. We stopped next at Crewe, where the automatic vacuum-brake worked all right. We again changed engines at Crewe; the automatic vacuum-brake was again tested and was all right—my own gauges showing 16 to 17 inches of vacuum when the train started. The rear guard gave the usual white-light signal. We lost 34 minutes in running from Euston to Bletchley, including a stoppage of 27 minutes at Tring. We arrived at Crewe 25 minutes late, and left 27 minutes late. The Bristol carriage for Glasgow was attached there to the rear of the train. As I was a brake-van short, I wired from Crewe to Wigan to marshal the third-class brake for Glasgow behind the two carriages from Manchester and Liverpool. This was done. We stopped in due course at Wigan, where the automatic vacuum-brake acted properly. The Bristol carriage was re-marshalled there, and placed in front of the carriages from Liverpool and Manchester as usual. At Wigan the driver created the required vacuum and got an "all right" signal from the rear guard, which I transmitted to the driver. On approaching Preston the signals were on, and the driver applied the automatic vacuum-brake and brought the train under control. He did not stop it until we arrived at the platform. There was no over-running there. There was no attaching or detaching at Preston, and so the vacuum was not tested there. We took an assistant engine in front from that station, and my train on leaving there was as follows:—

Assisting engine.

Train engine and tender (515/15).

West Coast 3rd class No. 303, Euston to Aberdeen.

West Coast sleeping composite No. 114, Euston to Aberdeen.

West Coast sleeping saloon No. 267,* Euston to Perth.

West Coast (conductor's) brake van No. 462, in which I rode.

West Coast composite No. 147, Euston to Glasgow.

West Coast sleeping composite No. 111, Euston to Gourcock.

Caledonian composite No. 30, Bristol to Glasgow.

West Coast composite No. 143, Manchester to Glasgow.

West Coast composite No. 128, Liverpool to Glasgow.

Third-class with brake compartment, No. 66,* Liverpool.

London and North-Western sleeping saloon No. 136,* London to Stranraer.

London and North-Western composite No. 610,* London to Stranraer.

London and North-Western brake van No. 345, in which guard Armstrong travelled.

We left Preston at 1.34 a.m., 30 minutes late.

The train ran from Preston to Shap Summit all right, and stopped there at 2.50 a.m. to detach the pilot engine. It was 30 minutes late. After doing this we left at 2.55 a.m., which was 33 minutes late. We then ran all right, and at about the usual speed to Upperby Bridge junction, where I applied my hand-brake, as I usually do. I put it hard on and chained it. At the same time I saw that both the train-pipe and reservoir gauges were standing at 13 inches. (I had noticed on passing Wreay they were both standing at 17 to 18 inches.) Then I consulted my time-piece, to see what time I would book the arrival of the train at Carlisle station for the driver's ticket, which had to be ready on arrival at Carlisle. I then looked out just after passing Upperby Bridge junction, say 300 yards north of the junction, and I thought the driver was running too hard. Upperby Bridge junction is about $1\frac{1}{4}$ miles from the south end of the station. The driver had applied the brake a little on the south side of Upperby Bridge junction. I saw the gauge go back as I was standing watching it, but I did not feel the blocks rubbing, nor did I perceive any slackening. The speed was about 30 miles an hour as we passed Upperby Bridge junction. I did not attach any importance to this, because the driver only reduced the vacuum two or three inches. After looking out, as stated, about 300 yards north of Upperby Bridge junction, I turned round to put on the automatic brake, but found that the gauge showed zero for the train-pipe. I held the lever down for about 10 seconds. I did not, however, feel the brake taking any effect on the train. I concluded that the driver or someone else had put on the automatic vacuum-brake, but I had not felt it. The gauge stood in that way until we stopped. I observed that the reservoir gauge stood at 13 inches as we passed through the station. The driver whistled when about passing No. 5 cabin, and that was the first time I heard him whistle. I could then do nothing more, my hand-brake being on at the time and chained up. We ran through Carlisle station at a speed of about 30 miles an hour I should say. I felt the train slackening when my van was about opposite the book-stall, about the middle of the station. It continued slackening until we struck the Caledonian engine, which was a little north of No. 4 cabin, which is at the north side of the station. I should think we struck it at about 20 miles an hour. I was holding by the door-way and partition when the collision occurred, and was thrown backwards and forwards. I was not aware from the feeling at the time that we had struck the engine, but I fancied that we had broken away and something had gone off the road. I at once went on to No. 3 cabin and told the signalman to let nothing up until he heard from the station-master. When I came back I found the driver sitting on the step on the side of his engine. He shook his head, and said it was a bad job. He is a regular driver, and his name is Rumney. The engine was much damaged, and carriage 114 was telescoped into coach 303. The front end of sleeping saloon 267 was damaged, as were also two other carriages. Four passengers were killed, two of whom were riding in the third compartment of the coach next to the engine. The two

N.B.—* means a 42 ft. vehicle, counted as $1\frac{1}{2}$.

compartments next the engine were locked up. There was a railway servant in the second compartment from the engine. He escaped unhurt. In the third compartment, of the carriage next the engine, there were four or five passengers—Colonel Eyre's servants going to Stirling for Aberfoyle. The next was a luggage compartment, and then a compartment for ladies only, in which were two or three ladies. The last compartment was a smoking compartment, in which there were four gentlemen. At Tring a gentleman looked out of a sleeping saloon and asked what was wrong? and I told him I did not know. Then I went along the train and met guard Armstrong, and saw what was the matter. The same gentleman afterwards asked me again what was wrong, and I said I thought the brake was frozen on one vehicle. After we had detached the vehicle he asked me if the "air brake" was all right, and I told him "yes." I did not tell him we were going to change the brake from automatic to simple, but he might have overheard us talking of it. I did not see the gentleman again on the journey. When we stopped at No. 1 cabin, south end of Tring, I ran forward to the signal-cabin, not knowing what was wrong, and the pointsman told me that the train was on fire, and that he had got the "Stop and examine" signal from Northchurch. It was in going back towards the van that the gentleman spoke to me the first time. I have been 23 years in railway service; 20 years with the Caledonian and three with the London and North-Western Railway Company. My duty is to travel with the train from London to Perth. I was a little shaken by the accident, but I am well now. At Tring, where we could not get the brakes off No. 35 van, the guard and I and two sleeping carriage attendants went along the train and moved the levers to change the automatic brake into the simple vacuum-brake, but we could not release the brake on 35 van, so we drew the train on to Tring station with the wheels of the van skidding, and the porter at the station released the pipe and couplings at the back of the vans from the rest of the train. This appeared to ease the brake-blocks, and when the driver drew forward, the trailing pair of the van wheels revolved, and as he backed it into the siding the front pair also revolved. The van was a six-wheel vehicle. The brake does not act on the centre wheels.

Peter Armstrong stated: I was rear guard of the 8.0 p.m. train from London on the 3rd March, and was riding in the last vehicle. The train consisted of 13, equal to 15, vehicles on leaving Preston. After leaving Preston we first stopped at Shap Summit. The automatic vacuum-brake was applied by the driver to stop the train and put off the assisting engine, and it worked all right. I did not feel the driver test the automatic vacuum-brake on approaching Carlisle. I applied my hand-brake before reaching Upperby Bridge junction, in accordance with my usual practice, and I never took it off afterwards. I did not hear the driver whistle, but I found that we were going too fast when passing the engine shed, which is a little north of No. 12 cabin, and I applied the automatic vacuum-brake. I did not feel it take any effect. I could not see the wheels of any of the carriages skidding except those of my own brake-van, although I looked out for the purpose. We ran through Carlisle station at from 30 to 35 miles an hour. The speed slackened after coming into the station. We pulled up fast on coming to the level part of the line in the station, but the train did not appear to do so until then, and we ran into a Caledonian engine at the north side of the station. We put off at Tring a London and North-Western brake-van, which was for Gourcock, in consequence of the brake being on and the tyres being red hot. I believe this was through the frost. Before leaving Euston it was thawed by the carriage people burning oily waste underneath it. No one travelled in this van. I am quite satisfied the automatic brake took effect at Shap Summit. When approaching Upperby

Bridge junction I had 15 inches of vacuum, which was reduced to zero in the train-pipe, when I applied the automatic vacuum-brake, at the south side of the engine shed. The reservoir gauge went back from 15 to 10 inches, at which it remained while we ran through the station. I expected that I was applying the brake throughout the whole of the train, and put it on for that purpose. I could not see that it took any effect. There was nothing unusual in the speed of the train passing Upperby Bridge junction. It was about 45 to 50 miles an hour. I think the speed was a little reduced when the train reached Upperby junction. The driver backed his engine to the train at Euston at 7.50 p.m. and created a vacuum. Both gauges in the last van showed about 20 inches. Some of the carriage examiners were standing opposite the Gourcock van looking in, and I also went and looked in and saw 20 inches of vacuum recorded in the train-pipe gauge, and nothing in the reservoir gauge which showed that there was no vacuum in the reservoir—only in the train-pipe—of that van. There is a reservoir on the van. The men commenced examining the gearing, and I could see from the lights they were burning that the cylinder and apparatus were covered with ice. They thawed it, and the driver blew up again, and both train-pipe and reservoir showed the same—18 or 20 inches. We stopped at Willesden, and the brake worked all right there. We were stopped at Tring for examination, and I looked at the gauge in the Gourcock van and saw the train-pipe was standing at 18 inches. I cannot say how the reservoir gauge stood. The quadrant on this van was at automatic working. At Wigan both gauges in my van showed 18 or 20 inches, and remained the same to Shap Summit. Passing Penrith I had about 16 inches in both gauges, and they stood the same until after we passed Wreay, when they went down to 15 inches. I have been 19 years in railway service; eight years in the Joint Committee service as a guard. The train was not stopped until it struck a Caledonian engine at the north end of Carlisle station. The engine and tender remained on the rails; the two coaches next the tender were off, the second vehicle being telescoped into the first. The North British van had three wheels off, and the sixth vehicle had the leading wheels off. All the rest of the train remained on the rails. I did not feel the collision, but I felt the train running forward after the collision. I was not hurt. When I examined the train at Tring all the levers on the coaches were standing in the position for the automatic brake to work. The lever-handle on the Gourcock van was in the same position as the rest, viz., for automatic working. I turned all the levers to work simple vacuum from Tring to Rugby, but I had to get the conductor's assistance to turn the one on the coach next to the tender. I think the night foreman at Tring did not reach the train until after I had reversed the levers on the Gourcock van. The carriage examiners at Rugby altered all the levers so as to work automatic vacuum-brake before the train left that station.

John Freeman stated: I am in the carriage department as foreman, at Euston. I examine to see that the trains are in proper working order in every respect. I saw the 8 o'clock train on the 3rd March. I saw that the train was worked with the automatic vacuum. I went along the back side of the train about 10 minutes to 8, on the off side of the train, the part away from the platform, and when I reached the rear van I got through the van to go on to the platform. The driver then started to create his vacuum. I stood and watched the gauge go up, the indicators of the gauges to the reservoirs and to the train-pipe, until they reached about 16 inches. I was convinced it was all right; then I went on the platform and walked down the train towards the front end. When I reached there, the assistant station-master said there was something wrong with the vacuum in one of the vans. I immediately went to this van, No. 35 North-Western brake for Gourcock, and my man, who had discovered that the indicator of the reservoir gauge would not

move, had got a little oily waste and had set fire to it and held it under the fiveway cock thinking it might have been slightly frozen. The fiveway cock is the thing that admits the air into the reservoir. It is on the pipe that admits the air. The air passes through it. I at once superintended what was going on, and gave instructions, and in about a minute and a half, I should say, after holding this bit of lighted waste underneath the fiveway cock the reservoir indicator began to move, and went round up to about 17 inches equal to the train-pipe gauge. I was then convinced that everything was all right. The station-master was also present, and I told him it was all right now for starting the train. This occurred about a minute before starting time. I did not notice specially, just at that time, the lever handle which regulates the brake on this Gourcock van. The gauges would blow up no matter which way that handle was if "simple," or "automatic," but not when at the "cut off." I have been in the North-Western Company's service about 25 years, and I have been at this work at Euston 16½ years. I am called carriage foreman, or foreman of the carriage department. The train left apparently in every respect all right.

Colonel Rich.—It was not all right, because it was wrong long before it got to Tring. What is your opinion—I suppose you have formed some opinion—and you ought to be a good judge in your position. What is your opinion as to the cause of the brake acting on the Gourcock van?—Probably a little water had got in the fiveway-cock or the pipe, had frozen, and had stopped the parts through which the air could be drawn. That is only as regards the van taken off at Tring. *Q.* I want to know what your opinion is as to what went wrong afterwards, to cause the accident at Carlisle?—I cannot form any opinion that would lead you to think there was any defect in the working of the automatic brake. *Q.* Mr. Whale has tried it with some one; were you there?

Mr. Whale replied, No, he is at Euston. I tried it with Mr. Turnbull, of the traffic department, and Mr. Williams, of the carriage department. Some of the carriages went away to Stranraer. I have never seen those; I have seen nine of the vehicles of the train; they were at the end of the train. We tried six.

Colonel Rich.—They could not interfere with all those in front of them.

Mr. Whale.—We tried six that were runnable, and we examined the apparatus, the train pipe, &c., of the three coaches that were so damaged they would not work. I examined these. The pipes were perfectly free.

Mr. Park.—He means the brake apparatus of the three coaches that were damaged.

Mr. Whale.—Yes; we could not run them, and I have pulled down the whole of the apparatus on the engine and examined that. It was in perfect order, all the valves and everything right as possible; there was no obstruction in the pipes. I cannot form any idea that would lead me to think there was any defect to cause the overrunning at Carlisle. As far as I can judge, the brakes were in proper working order.

John Robley stated: I was doing station-master's duty at Carlisle on this night when the accident happened. The train ran through the station I should think at a speed of from 25 to 30 miles an hour. I warned No. 3 cabin by telegraph that a train was running through the station and unable to stop. I was on No. 1 platform. I had not time to telephone. I thought the telephone would be engaged. The home-signal at the south end of the station was at "All right" for the train to enter, the starting-signal at the north end was at danger. The train ran past the starting-signal and ran into a Caledonian engine just beyond No. 4 cabin, and it came to a stand about 10 yards from the crossing, and about 80 yards down the incline from No. 4 cabin. I do not know where the Caledonian

engine was driven to, or where it stopped. I did not see it. I saw the tender brake on as the train was entering the station, and after the train passed me, the rear brake. No others. I have been in the Joint Company's service 28 years. I have been about 10 years assistant station-master at Carlisle. It was a damp night, a soft damp night, not snowing or sleeting, but a little dropy. All the signals were burning right. My charge extends only from the platform to cabins No. 4 and 5. I was on the island platform between the refreshment rooms when the accident happened. The driver whistled as he entered the station. I might not have heard him if he whistled further back, but he whistled on entering the station. I did not take any notice of the brakes as to what state they were in after the accident, but the carriage examiner did so; he is at home. He does night duty.

Thomas Harper stated: I was signalman on duty in No. 5 cabin, south end of Carlisle station, on the night of the accident. My signals were all right for the train to proceed, both the home and the distant. The train passed my cabin at 3.30 a.m. It was going about 40 miles an hour, much faster than usual. Coming in at a speed of 40 miles, they might stop with the continuous-brake, but I have never seen them come in so fast before. I have been in the railway service 10 years, six years a signalman. Two years in No. 5 cabin. I am in the service of the Joint Committee. The brake on the rear van and the brake on the tender of the engine were the only brakes I saw on. I did not see the driver, and did not see anyone in the train, guards, or anyone. I heard the driver first whistle when he was between No. 6, which is the Maryport and Carlisle junction cabin, and my home-signals. He whistled again when entering the platform.

Mr. Cattle, district superintendent.—That is the first time No. 6 has been mentioned, and that is the Maryport and Carlisle junction cabin.

Mr. Whale, district local superintendent.—It gives the position where the engine was. I did not hear the driver whistle further back than No. 6.

Mr. Neele, superintendent.—Do you think that the brake was not working on the van, which was the fourth or fifth coach from the engine?—I did not see it. Would you have noticed it?—I was at the telephone at the time. What did you do?—Getting the attention of the man at the north end. What to tell him?—To see if his line was clear.

Colonel Rich.—You thought the train would not stop?—Yes, I got reply from the north end. The man in the station middle box, No. 4A, rang at the same time as the man at the north end box, and the man in the middle box asked if he had anything on the road. He said, yes; he had a Caledonian engine.

Mr. Neele.—Was that reply given to the man in the middle and you heard it?—No. Was the reply being given to the man in the middle or to you?—To both I expect.

Joseph Milburn stated: I was signalman at No. 4 cabin at Carlisle on the morning of the 4th, when the accident happened. The signalman at No. 4A, which is about the middle of Carlisle station, first notified me of this train coming along. He telephoned down to say he thought it was not going to stop. I had a Caledonian engine coming back into the sidings, and as soon as he told me that, I waved the red signal with my hand to the Caledonian engine-driver to stop him, but I could not say whether he stopped his engine or not. As I turned round I saw the train from London coming through the bridge below the viaduct. The centre cabin telephoned to me. He shouted out that he thought the train was not going to stop. I could not give you much idea what speed the train was running at. The collision was close up to my box, just a little below it to the north. The collision occurred at the north side of my cabin. The starting-signal was standing at danger. I could not have let the Caledonian engine through without having the signal at danger. I had got the

"Be ready" for this train before I got the telephone. I got the "Be ready" before I let the Caledonian engine across. I let it across according to the usual way of every-day work.

Colonel Rich.—I suppose it would be very inconvenient to stop working at the north side for all the working at the south side?

Mr. Neele.—The Caledonian Company should reply to that question. Do you consider yourself, Mr. Thompson, it would be unworkable to adopt any other principle than this?

Mr. Thompson.—Yes.

Mr. Neele.—What is the "Be ready" given for then?

Mr. Thompson.—After the train comes to a stand, at Carlisle station, the signalman is to be prepared to take the engine.

Mr. Neele.—That is the object of sending you the "Be ready"?—Yes, to let us know he gets a clear road into the station, and if we have not a clear road he is cautioned outside the station.

Colonel Rich.—You mean a clear road between No. 5 and No. 4 cabin. You do not mean a clear road to the north of your cabin?—No, the other end from No. 5. The signal at No. 5 would not be taken off if the station was not clear, but it does not affect the line beyond my cabin. I have been in No. 4 cabin about nine years. In the Company's service, 10 years, viz., from the time of opening of the Citadel station. I have never been on duty and seen a train run through the station before. It has occurred in my mate's time. It happened about three years since. There are three men to work the box. I expect it was the case that General Hutchinson inquired into.

Mr. Cattle.—The 21st December, 1886?

Colonel Rich.—That train had continuous brakes?

Mr. Turnbull.—Yes.

Mr. Whale.—On certain vehicles it had automatic.

Mr. Cattle.—Automatic on the vans, and simple vacuum on the rest.

George Campbell stated: I am fireman in the Caledonian Company's service, and I was on duty on the Caledonian engine that was standing in the way on the morning of the 4th March—the engine that was run into. I was going to run the 3.50 a.m. from Carlisle to Perth, the postal train. The engine was running across to get into the siding. The postal goes from the same platform as the train that was run into. I did not get any notice that this train was coming before my engine was pitched into. I was looking by the side, and I saw two white lights coming. It was the train. I was looking towards the siding that I was going to. I saw the two white lights on the train that ran into my engine. I had just time to speak to my driver. I said, "Look out, here is the Lanky coming."

Mr. Thompson.—He means the Lancashire and Carlisle train. My driver reversed the engine and got her into forward motion. He was going back very slowly at the time, moving towards the station. He reversed and got the engine into forward motion, but I cannot say whether he got steam on.

Mr. Lambie.—He had just steam on.

Mr. Whale.—Did the engine get into motion before the collision occurred?

Mr. Lambie.—No.

Mr. Whale.—It was moving south when the collision occurred.

Colonel Rich.—Do you recollect whether it was moving towards the station or towards Glasgow when you were struck?—We were moving towards the station; both of us stopped on the engine. I was a little hurt on my side, my driver was hurt; he is not here. I think his back was hurt. He is off duty, at home.

Mr. Neele.—How far were you driven back?—We stopped underneath the corner bridge. How far?—I could not say exactly the distance.

Mr. Thompson.—About a quarter of a mile I should think.

Colonel Rich.—Did you both stop on, till the engine came to a stand?—No, we were both knocked down,

but the driver got up and got the engine reversed before I got up. I did not get off the engine. It was stopped as soon as we could after the collision. The hand-brake was ho' use; it was knocked out of order. We could only stop by reversing. The tender-brake and the Westinghouse brake were knocked out of order. I have been in the Company's service since 1883, and a fireman since 1887.

William Potts stated: I am carriage examiner for the Caledonian Railway Company. I examine the trains before they start for the north when going north. I recollect the 4th March, when the accident happened. I got on the scene perhaps a minute and a half after it happened. I was on duty. I looked at the brake blocks. I found two hand-brakes on, and two vacuums not hard on, only rubbing, one on the Caledonian composite No. 30, and one on No. 43 West Coast composite. All the rest of the brakes were off. I did not notice, whether the brake was on the engine or tender. I merely attended to the carriages as far as I could see what the brakes were like. I understand the brakes partly. All the lever handles were standing at "automatic," standing on the A side. I did not examine the wire pulls that take off the brakes for shunting. The only two I did anything at, were No. 30 and 43. I leaked the vacuum off these two. I turned one of the handles to simple vacuum. The brakes then relieve themselves, and the other I leaked off by the wire. I could not pull the lever over; it was too stiff. When the train started again for the north, for Glasgow and Edinburgh, I turned all the carriages with the old vacuum to simple vacuum, and they leak off themselves, and the vans that the old automatic is in, I relieved them by wire by hand. I relieved them all before I coupled them up to the Westinghouse brake. The Westinghouse pipes were coupled all the way through. It is only the attachment to the engine that is altered.

Mr. Park.—You say that you were there one minute and a half after the accident?—It may be a little more; I would not like to say I went as soon as ever I could get down.

Colonel Rich.—Where were you when it happened?—I was standing on the platform edge, waiting for the train to come in.

Mr. Park.—You went along the whole length of the train to see how the brakes were?—Yes.

And you found the brake on the brake-vans and on two of the carriages?—Yes.

Did you go into the brake-van?—No.

You did not go inside, and see what the gauges registered?—No.

Colonel Rich.—How long have you been at this work?—About 34 years as examiner, and 34 years in the Company's service. I did not go in as an examiner to start with. I was at Glasgow six or seven months in the shops before I came here. I am a millwright, I served my time to a millwright.

William Kelly stated: I am a lampman in the Caledonian Company's service. I was standing at the bookstall when the London train came into the station. I had the lamps to look to. I looked at the train after the accident. All the brakes that I saw on were on the north van and on the rear van. I saw this as the train passed me running through the station. Standing on the platform I could see the coaches as they passed. The Bristol carriage was slightly rubbing, but very little. It was the second carriage behind the north van, about the middle of the train.

Mr. Park.—You could only tell if there were some sparks flying.

Mr. Cattle.—Where on the platform were you standing; near the edge of the platform?—About the centre; I had the lamp barrow standing in the centre, and I was standing by the side of it when the train passed. Are you sure you saw the north brake-van skidding?—Yes, and the rear one.

Mr. Park.—What position was the north van in?—The wheel of the brake was next to the engine.

Colonel Rich.—Where was the north van placed in the train?—I think there were four vehicles, and then the north van.

Mr. Park.—Had it been next the engine it would be rather a point in the case; it would have proved almost conclusively that the vacuum-brake was working.

Mr. Neele.—Those two vans were the only ones you saw sparks flying from?—Yes.

How could you tell it? How near were you to the train?

Mr. Cattle.—He said about the centre of the platform. I was standing on the platform when the train passed me.

You could see it?—Between the top step and the bottom one.

What did you see?—I saw the sparks flying from the wheels.

From those two wheels?—Yes.

And nothing else in the train except those two?—The Bristol carriage was slightly gripping.

Mr. Whale.—What about the tender?—I could not see anything about it.

Colonel Rich.—What speed was the train going?—As near as my recollection of the thing, about 35 miles an hour. Have you any experience in that way; have you been brakesman or travelled with trains?—I have travelled backwards and forwards a few times to Glasgow.

Mr. Neele.—Have you ever seen a train like that in your life go through Carlisle?—I saw one run through, the last train that went through, 4.15.

Colonel Rich.—On that same day?—That was previous.

Mr. Whale.—He means the train that met with the accident in December 1886?—Yes; I never saw a London and North-Western engine going as fast; I never was on the London and North-Western to see them passing any roadside station. I ran down as soon as the train passed. I left the lamp-barrow and ran down. I did not look at the brakes. I looked to see what had occurred, and I came back and informed Inspector Thompson.

[*Harry Davies*, fireman to driver Thos. Rumney, stated: Driver Rumney and I were appointed to work the 11.40 p.m. express from Crewe to Carlisle on March 3rd, and we backed the engine on to the train about 12.5 a.m. March 4th, a single compound engine with 6 ft. 6 ins. driving-wheels. There were brake-blocks on the hind wheels of the engine and on the six tender wheels which were worked by the steam. The same handle works steam-brake on engine and automatic-brake on the coaches, and they cannot be put on separately. I coupled the engine tender to the carriages, and I coupled up the vacuum hose-pipe. I then coupled up the communication cord, put the lights in the front, and got on the engine. I saw the driver blow up the vacuum on the engine, and I saw the "All right" signal given by the rear guard, but I did not notice what amount of vacuum was registered on the gauge. As far as I can remember we left Crewe at about 12.10 a.m. The first stop after leaving Crewe was Wigan, at which place we stopped, by the application of the automatic vacuum-brake, just at the water column. The next stop was Preston, at which place we stopped by the application of the automatic vacuum-brake. The next stop was Shap Summit, to detach the pilot engine which was attached at Preston. This stop was also made by the application of the automatic vacuum-brake. We did not over-run at any of these stops. Just on the Carlisle side of Wreay station the driver shut off steam, and as we were passing the distant-signal for Wood Bank my mate applied the automatic vacuum-brake, but I cannot say which valve was used. I noticed that the brake did not appear to act, and I opened the sand-valves and did not close them again until after the collision. Immediately after I opened the sand-valves I applied my tender hand-brake, but after the driver applied the steam-brake, which he did

as he passed the sheds, when he also reversed and put steam on against, I slackened the hand-brake. The train was running about 35 miles an hour at this time. The driver whistled for the brakes just after passing Wood Bank and again on approaching the station. We ran through the station at about 20 miles an hour, I should say, but the speed was somewhat reduced before we collided with the Caledonian Company's engine. I kept on the engine until after the collision, and was only slightly hurt. As the train approached the sheds I put my screw-brake on as tight as I could and kept it on till after the collision. I have been 10 years in Company's service, about 3½ years a fireman. I had not worked since Saturday the 1st. I went off at 9.0 p.m. Saturday and booked on 10.0 p.m., Monday the 3rd March. Sleet was falling from Preston to Carnforth, and it was freezing. We slipped a little all the way up the Shap, and I used the sand frequently. My engine was never uncoupled from the train from the time it was coupled up at Crewe until after the collision at Carlisle. I did not notice the driver using the ejectors. I think he was applying the vacuum, because I heard the sniffling noise. I have not much experience of the vacuum-brake. The driver made no remark to me when running through the station except to open my sand-box, but it was full open. The driver was standing at the left side of his engine. I first saw the driver at the sheds at Crewe when I was firing. He was quite sober. I believe he is a teetotaler. He had his tea can on the engine, and I saw him use it about twice. I have known him for the last nine years. The driver was hurt and is now in the Carlisle infirmary.

John Hall stated: I am signalman in No. 12 box, Carlisle, and have been there three years. I have been in the London and North-Western Company's service 11 years, and have been a signalman 10 years. On the morning of March 4th I received the "Be ready" signal for the 8.0 p.m. from London at 3.23 a.m. from No. 13 cabin, and "Train entering section" signal at 3.27 a.m. The train is about Southwaite when I get the "Be ready." The train passed my cabin at 3.28 a.m. When the train passed me it appeared to be running at about the speed expresses usually run past my box—about 30 miles an hour. I noticed that the tender-brake and the rear guard's brake were hard on. The front van-brake may have been on, but I did not notice that it was. The train cleared No. 5 cabin at 3.29 a.m. I went on duty at 10 p.m. on the 3rd. Sometimes trains passing my cabin have the continuous-brakes on, and sometimes not. I think this depends on the drivers.

Anthony Hudson stated: I am signalman at No. 13 box, Upperby Bridge junction, Carlisle, and have been there since it was opened. On the morning of March 4th I received the "Be ready" signal for the 8.0 p.m. from London at 3.22 a.m. from Wood Bank. At that time the train would be passing Southwaite. I received "Train entering section" at 3.27, and the train passed my box at 3.28 a.m. All my signals were off. As a rule expresses pass my box about six minutes after I receive the "Be ready" signal for them. When the train passed me I did not notice that its speed was unusually fast. I think it was running at a speed of 35 to 40 miles an hour past my cabin. The rear brake-van wheels were skidding, and sparks were flying from the rails. No other brakes were on. I received "Clear" from No. 12 box at 3.29 a.m. I have been in the North-Western Company's service 20 years, 17 of which I have been a signalman.

William Fisher, brakesman, Carlisle, stated: I joined the 8.0 p.m. from London at Crewe on the morning of March 4th to return home. I was asleep most of the journey, but awoke when the train was passing Upperby junction. I did not notice particularly the speed of the train until after passing the Crown Street goods yard, before reaching No. 5 cabin, and then I heard the driver whistling for brakes. I stood up and opened the carriage window

and looked out as we passed through the station. I saw we were going too fast, and did not expect the train would stop at the station. I did not feel the brakes on the wheels of the carriage I was in. I was in the second compartment from the engine, and was standing up at the time of the accident. I was only very slightly hurt. I should say that the train ran through the station at about 20 miles an hour. I did not notice the brake-blocks rubbing on the wheels of the carriage I was in at all after I awoke about Upperby junction. I have been 14 years in the London and North-Western Company's service, and eight years a brakesman. I felt the brakes applied at Shap, but I was asleep when the train stopped at the other stations.

Thomas Rumney, driver of 8 p.m. from London, stated: I joined the train at Crewe at 12.2 a.m., left at 12.7 a.m. on the 4th March. I had $11\frac{1}{2}$ coaches from Crewe, and my engine was No. 515, a compound tender-engine, the leading wheels 3 ft. 9 ins., the driving low-pressure and the trailing high-pressure wheels were 6 ft. diameter. The engine was fitted with a steam-brake, and the tender with a steam-brake which could be worked without the vacuum when the engine was not attached to the train, but when attached to a train the vacuum-brake on the train and the steam-brake on the engine work together. After leaving Crewe I stopped first at Wigan, next at Preston, then at Shap Summit to detach the pilot engine, which was attached in front of my engine at Preston. I made all these stops by means of the automatic vacuum-brake. Before leaving Crewe, the conductor informed me that $11\frac{1}{2}$ vehicles of the train were fitted with the automatic vacuum-brake. Some of the large coaches count as $1\frac{1}{2}$. I cannot say how many of these large coaches I had. At Wigan the conductor told me that more coaches, which made the train equal to 16, had been added at the tail end, and that the additional coaches were worked with the automatic vacuum-brake. I had blown up the vacuum to 25, and I maintained it at 21 to 22 by means of the small ejector on my engine. The small ejector is worked by a different handle to the large ejector. After leaving Shap I had from 21 to 22 inches vacuum shown on the vacuum-pipe gauge all the way down the bank from Shap Summit to Wood Bank, near Carlisle, where I first tested the brake. To test my brake at Wood Bank I opened the release-valve on the splashers of the engine my gauge went back to zero, but I did not feel that the brakes took effect, so I blew up the vacuum with the large ejector lever till the gauge showed 25 inches, and then by pushing the same lever home, I opened the release valve, to apply the automatic and the steam brake to my engine, but my gauge again went back to zero, and I did not feel the automatic-brake acting on the train, but I think the steam-brake went on on the engine. On finding the brakes did not take effect, I reversed the engine before I reached the Carlisle steam sheds. I think my train was running between 40 and 50 miles an hour when I passed Upperby Bridge junction. Before reaching the sheds I told my fireman to put on the tender-brake and apply the sand, and I saw that the sand-lever was in the open position. I could not check the speed of my train, and I ran into Carlisle station at a speed, I think, not over 20 miles an hour. I whistled for the guards' brakes as I ran down to the steam sheds, and again on entering the station, but my train ran through the station, and my engine struck a Caledonian engine, which was at the north side of No. 4 cabin, at the north side of the station. I never felt that the automatic-brake acted at all from the time I tested it until I struck the Caledonian engine. I remained on my engine and held the brake-lever to apply the brakes, until my engine struck the Caledonian engine. I did not see my fireman get off before the collision. I was stunned, and was fixed by the coal, but I loosed my legs and got off the engine after the collision. My fireman had got off before. I believe I had three

or four ribs broken. I was taken to the hospital, and I have not yet got back to work. I cannot lace my own shoes yet. I have been 30 years in the London and North-Western service. I was appointed extra engine-driver in January 1867. I have been driving the express trains to the north for more than 10 years, but as I cannot find my store book I cannot say exactly. I have worked the chain-brake, the simple vacuum, and the automatic vacuum. I cannot recollect when I last worked the simple vacuum-brake. I have worked the simple when the stock was not fitted with the automatic vacuum. The last time I recollect the automatic not acting was I think at Crewe when I was driving the 1.55 Crewe to Carlisle. The automatic was changed to simple before I started. I cannot say what was the consequence of the collision, as I was stunned. I think in some places I was running 50 to 60 miles an hour while descending the Shap. I cannot account for my brake failing unless it was caused by frost. I had one case of frost when the pipe between the engine and the tender was frozen. It was at Northampton in 1889. I had driven the 1.5 a.m. from Crewe, and when I applied the automatic brake at Northampton the brake did not go on at once, but I blew with the large ejector and they went on, and I could not get them off until I uncoupled the tender from the train and the release valves were opened on each carriage. When I got to Bletchley about one foot of ice was found in the pipe under the footplate, and the drip-valve was frozen. When I blew up with the large ejector at Northampton the engine-gauge showed a vacuum, but I could not create a vacuum in the pipe underneath the engine owing to the ice. I always run with the small ejector open to keep up the vacuum, which would fall at once if I did not; but I have known cases when I have shut the small ejector to try how tight the valves were, and the vacuum has held steadily for a mile or so, and I have found that if I put on the small ejector very slightly the vacuum would leak off sooner than if the small ejector was shut tight. I think this was owing to the action of the ejector letting the valves leak. When I used the automatic vacuum at Shap Summit my gauge went back to zero and returned to the vertical, and worked up again to over 20 by means of the small ejector while I was standing and oiling at the Summit. Before starting on the 4th March I had looked round my engine. The brake-block and all else appeared to be in good order. I was driving the same engine when I got stopped at Northampton. It was in the belly of the pipe between the engine and tender that the ice was formed.

Archibald Crooks stated: I was driving the engine of the Caledonian Railway Company on the morning of the 4th March, when it was run into by the London and North-Western 8 p.m. train from London. I was driving my engine from the Caledonian sheds at the north side of Carlisle station to No. 1 siding, where I had to wait until the 3.50 a.m. from Carlisle to Perth should arrive from London. The train that I was to run is the 8.30 p.m. from London, which reaches Carlisle after the 8 p.m. from London. While I was running towards the siding my fireman called my attention to two lights, and at the same moment I saw the funnel of the London and North-Western engine over the back of my tender. I was backing my engine towards Carlisle station at the time. I reversed at once and put steam on, but I do not think I got into forward motion when it was struck. I think my engine was just on the turn. I cannot say what speed the London and North-Western engine and train was running, but the collision started my engine and it ran about a quarter of a mile down the bank and through the overbridge before it stopped. I was knocked stupid and hurt in the back, but I managed to reverse my engine and put on steam as it was running down the bank. I have not been able to work since. My fireman remained on the engine and was slightly hurt. I

had time to jump off before the collision, but I preferred sticking to my engine. I have been 33 years in the Caledonian Company's service, 25 years driving, and nine years driver of express trains. We do not know, when we are going from sheds to station, what is doing in the station. We work under the instructions of No. 4 cabin signalman, who had given me a hand-signal on the night in question to run my engine as I was doing. He gave me no warning that the London and North-Western train was running through the station.

George Whale, assistant locomotive superintendent, London and North-Western Railway, stated: I arrived at Carlisle at 4.25 p.m. on the 4th, and proceeded to the scene of the accident, and there took the evidence of some of the men. Mr. Neele had previously taken the evidence of the conductor and guard. I tested, in the presence of Mr. Williams of the carriage department and Mr. Turnbull, assistant superintendent, the following vehicles:—Caledonian tri-composite 30, West Coast No. 66 third brake-van 147, West Coast composite, 162 West Coast brake-van 267, West Coast sleeping carriage 128, West Coast composite, which were runable. I tested these vehicles running and at rest, and the automatic brake acted well on each and all of them. I further ordered the pipes to be taken off the vehicles No. 303 West Coast third and 114 and 111 West Coast sleeping carriages, which were not fit to run. I examined them on the 6th, and, so far as I could judge, the pipes and the rest of the brake apparatus were in good working order. I could find nothing to prevent the brakes acting properly. On the 6th I also examined the whole of the brake apparatus belonging to 515 engine, and every part appeared in good working order. I saw the driver at the infirmary on the morning of the 5th. He made a statement, but I could not ascertain from him any reasonable cause for the accident. I have been in my present position on the London and North-Western Railway for 13 years, and previously assistant to the late Mr. Rigg for 10 years. He occupied my present position. On the 8th I examined the Register valve of the engine at Crewe works, and found it in good working order. Four coaches were not examined by me, as they were not damaged, and were sent on after the accident, and have been working ever since.

Joseph Barden, engineman, stated: I worked the 8.0 p.m. ex Euston on the 3rd instant with engine 437. I backed on to the train at Euston and blew up the vacuum to 20 inches in the usual manner. The brake

was applied when running into Willesden, and the train stopped as usual. I blew up again to 20 inches before leaving, and kept it at that all the way to Tring. I was stopped by signals at the latter station, and my fireman went to the signal-box, where the signalman told him that Northchurch had telegraphed there was something wrong with the train. He went down the train, and on his return to me said one of the tyres on the brake van, which was about the fifth vehicle from the engine, was red hot. He went back again, and on his return told me they were going to alter the train to simple vacuum, but I was first to draw down to the water column. Before I started I blew up again to 20 inches vacuum, but could not move the train. I reversed the engine, pushed the buffers in, and gave a snatch which enabled me to move the train and draw down to the water column. My fireman assisted to turn the water from the column bag on to the wheel. I again blew up to 20 inches, but could not move the train as the brake would not come off. The van was then uncoupled, put into the sidings, and when the engine was again coupled up to the train, I was told to work simple vacuum through to Rugby. The train stopped all right at Bletchley and again at Rugby.

Richard Walker, driver, stated: I worked the 8.0 p.m. ex Euston on the 3rd instant as between Rugby and Crewe. On the arrival of the train at Rugby the brake was changed from simple vacuum to automatic. I attached and blew up 20 inches of vacuum without any difficulty, and did not take any longer than usual to do so. I got a signal from the guard and started in ordinary course. I blew through occasionally with the large ejector on the road, and tested the brake at Old Basford station. It acted all right very quickly, and I pulled up in the station at Crewe without any difficulty.

D. F. White, driver, stated: I assisted the up Irish mail from Rugby to Tring on the afternoon of the 4th instant, and was instructed to bring back the brake-van from Tring to Wolverton. They did not appear to have ascertained what was wrong with the van; it was coupled up to my engine and I blew up the vacuum to 20 inches, but could not get the brake off. They then uncoupled a small pipe underneath the van and two or three drops of water came out. I held the pipe to the firebox to see if there was any ice in it, but there was none. Mr. Eaton from Bletchley and one of the carriage department men were there, and they then disconnected the vacuum-pipe from the engine again, and by this time the brake had come off, and I worked the van to Bletchley.

The evidence taken before the Coroner on the last day when I assisted him, is as follows:—

The Coroner.—Gentlemen, I am glad to inform you that on this occasion we have the great advantage of the presence of Colonel Rich. It seemed to me that the further this inquiry was continued, the more mysterious became the cause of the accident, and therefore I asked the Colonel if he would attend here to-day to give us the benefit of his experience. He has very kindly come, and if there are any questions that you would like to put to him by way of illustrating the facts, I am sure he will be glad to give you information. Now the first witness that we shall have to call is the driver, Thomas Rumney.

THOMAS RUMNEY SWORN.

The Coroner.—It is my duty to say to you that you are not bound to answer any questions which may tend to incriminate you, and therefore if any question is put to you, and you think an answer to that would incriminate you, you must claim your privilege, and it will be allowed. Do you understand what I mean? No doubt Mr. Errington will explain?—Yes.

I propose to read to you the evidence which you have already given before Colonel Rich, and if in

reading this there is anything you wish to correct, or have any remark to make upon it, please do so.

The Coroner read the following statement: "Thomas Rumney, on being duly sworn saith as follows: 'I am 'an engine-driver in the employment of the London 'and North-Western Railway Company. I have 'been in the service of that Company for 30 years, 'and for about 23 years have been a driver. I 'have been driving passenger trains more or less 'since 1871. I was driver of the 8.0 p.m. express 'from Euston on the morning of the 4th March. 'I joined the train at Crewe about midnight on 'the 3rd March. My engine was a 6 ft. compound 'tender-engine, No. 515; the leading wheels were 'three feet nine inches in diameter, and driving and 'trailing wheels were 6 ft. in diameter. I joined 'the train at 12.2 a.m., and we left at 12.7 a.m. 'on the 4th. Before leaving, conductor Downie 'informed me that there were 11½ vehicles on the 'train, and that they were working the automatic- 'brake. We stopped first at Wigan, where con- 'ductor Downie informed me that coaches had been 'added at the tail end, making the train equal to

"15 vehicles, and that the additional coaches were working with the automatic vacuum-brake. We next stopped at Preston, and we took on the pilot engine there. Our next stop was at Shap Summit, where we detached the pilot engine. On each occasion we stopped with the automatic-brake, and so far as I know it was in perfect working order. Before leaving Shap I blew up the vacuum to 25 inches by means of the small ejector on my engine, and I maintained it at from 21 to 22 inches all the way to Wood Bank, where I tested the brake before getting to Carlisle. At Wood Bank I tested the brake by opening the release-valve on the splashers of the engine, and my gauge went down to zero, but I noticed that the brake did not seem to be acting. Before testing it I saw that my gauge registered 22 inches. I then blew up again to 25 inches by means of the large ejector-lever, and then, by pushing home the steam-lever, I opened the release-valve to apply the automatic-brake and my steam-brake to the engine. My gauge again went back to zero, but I did not feel any check on the train; the steam-brake was on my engine. I then reversed the engine, and told the fireman to put his screw-brake on and open the sand-valves. At this time we were running between 40 and 50 miles an hour, to the best of my judgment, and were between Upperby Bridge junction and the steam sheds. I whistled for the guards' brakes on approaching the steam-sheds, and again on entering the Citadel station. I do not think we were going more than 20 miles an hour when running through the station. We were going about the same speed when we struck the Caledonian engine. I never felt the automatic vacuum-brake go on at all after trying to test it at Wood Bank; I had my hand on the large ejector-lever when the collision occurred. I was stunned and very much injured. The fastest speed at which we were running on the journey from Shap would be between 50 and 60 miles an hour at some places. I have occasionally had cases when the automatic vacuum-brake failed to act. One occasion was on the 6th January 1888 at Northampton."

The Witness.—I think that is a mistake; I think it was 1889.

If you will refer, we will see?—I had better look, I fancy it is 1889.

Mr. Whale.—It was 1889.

Mr. Errington.—It was the 5th January 1889, according to the Board of Trade report.

The Coroner.—Then I will correct this to 1889, "I was driving the same engine at the time, and the train was the 1.5 a.m. from Crewe to Euston, we stopped at Rugby all right by the application of the vacuum. On approaching Northampton I attempted to apply it, but I could not get it to act, I thought we were not going to stop, but before getting into the station the brake went on; I think it had been put on by the guards in their vans. I tried to get it off again, but could not do so, and could not pull the train into the station. We had to uncouple the tender from the train, and open the release-valves of each carriage. We went on from there to Bletchley with the hand-brakes. At Bletchley I examined the pipes under the engine, and found about a foot of ice in the pipe near the footplate between the engine and the tender. I also found that the drip-valve was frozen, and I could not get any air through it. When I blew up at Northampton my gauge showed a vacuum, but I could not create one." Now that is as far as you went before the Colonel?—Yes.

Colonel Rich would like to put some questions to you, if you would be good enough to answer him,

Examined again by COLONEL RICH.

You state in your evidence that you attributed the accident as far as you know to ice?—Yes.

If it had been ice in the pipe either between your engine and tender or elsewhere, you could not have got a vacuum?—We should see the vacuum on our gauge.

Yes, but if you could not have got a vacuum in the pipe, would not the brake have gone on?—They ought to have done.

They did do so at Northampton when there was ice?—Yes, but whether the guards put the brakes on or not I cannot say; but the brakes went on and we could not get the train into the station.

They went on when there was ice?—Yes, they went on when there was ice, but they did not seem to go on when I opened my release-valve.

When you pull up at a station by having applied the automatic vacuum-brake, have not you to make a vacuum before you can get away again?—The small ejector will generally fetch it up without using the large one.

But you have to make the vacuum with the one or the other?—Yes, we have to have a sufficient quantity in the main pipe, otherwise we cannot move.

Therefore if you cannot make a vacuum you cannot get your brakes off?—No.

Do you recollect for certain what vacuum you thought you had after stopping at Shap when you went to start again?—What vacuum I ought to have had?

No, what you had?—We had about 21 or 22 inches when we started away.

From Shap?—Yes.

I suppose before you took the pilot engine off at Shap you got well on the Summit. We had just got on the top again. The P. C. box at Shap. We stopped right opposite his box.

You were not on the incline falling to Tebay?—No, we stopped just on the top of the Summit, because I noticed the P. C. was just above, when I was going round the engine.

Is not it your habit when you stop at stations like Crewe or any place to shut off your small ejector?—Not except we are going to stop about five minutes or so; there is an order at some stations. We have to do so.

There is an order to that effect?—Yes.

Have you got the book showing the order?—There was an order came out, but I do not know that I have got the book. I could show it to you there was an order came out we had to shut it off at Rugby when going down and coming up. We had to shut it off for three minutes.

Is it your habit to shut off your small ejector when you stop at the station?—First of all at Rugby the bankmen had orders to shut the small ejector off so as we should not make a noise. We shut it off for three minutes; they generally looked after it, and we had to create a vacuum again before we started.

Who looked after it?—The bankman at Rugby.

Who were the bankmen?—The bank enginemmen.

They looked after it?—Yes.

To take it off?—Yes; they get us water and look after the sand.

Do you mean they go on your engine?—We oil the engine.

Do the bankmen go on the engine and do this?—Yes; they go on the engine and they get us water, sand, or knock our bars, or anything we require them to do, and me and my fireman oil the engine. I oil outside and he oils underneath.

Suppose the bankmen forget to take off the small ejector, what happens then?—I have to do it myself. Of course I cannot move the train unless I have got a vacuum.

But supposing you blew your vacuum with your big ejector and left your small ejector shut, you could get away then?—Yes, we could get away.

What is your small ejector for?—To keep up the vacuum.

And supply what is in the habit of leaking, and what always does leak more or less?—Yes.

The vacuum-pipe always leaks more or less, and the small ejector is supposed to run, so you keep it

open and run it the whole time in order to keep that vacuum maintained, do you not?—Yes.

Do you recollect whether you shut your small ejector at Shap?—I never shut it off at all that morning, only at Wigan.

You did it at Wigan, did you? Yes.

Why did you not do it at Preston?—Because they break the train at Wigan.

Why did you not do it at Preston?—There was no one there to assist us, and of course I did not interfere with it. I left it blowing and went on with my oiling, as we had 90 miles to run.

Do you know it is the habit with some of your drivers to shut off that small ejector whenever they stop?—I do not know. I am sure I do not make a practice of it; only where I am going to stop a little longer than common.

You stopped all right at Shap and started all right?—Yes.

The Jury.—Have the railway company any rule?

Colonel Rich.—He said there was, but he cannot give it.

The Jury.—Can the railway company give it?

Mr. Whale.—There is no rule; there may be a local order at Rugby, but there is no regulation at all about it; there is no regulation in the rule book nor in the special regulations applicable to the working of the vacuum-brake as to shutting off the small ejector when standing at stations.

Colonel Rich.—What I understand from Mr. Whale is, there is no rule. The driver said there was a rule.

The Witness.—An order, sir.

Colonel Rich.—I asked him to produce it, and he said he could not, so I assume it is some local order.

Who gave it to you?—The bankmen gave it me, but it is an order from Mr. Mumford.

Mr. Whale.—It is a local order at Rugby only, I expect.

The Witness.—If we do not lower it the bankmen lower it, the small ejector—

Colonel Rich.—Do you lower it or close it?—I lower it.

Do you recollect whether you noticed your gauge after leaving Shap before you got to Wood Bank?—I kept taking notice of the gauge all the way down the bank, both that and the steam.

Will you tell the jury where you noticed it, and what it was recording when you noticed it at the different places. Clifton would be the first place you would pass?—Yes.

Did you notice it at Clifton?—I think it was between 21 and 22 at Clifton, the same at Penrith, Plumpton, Calthwaite, Southwaite, and Wreay. I noticed it very particularly at Wreay.

You must have had a very good one, because when I ran the train up the other day it only made 17 instead of 21 or 22?—My engine vacuum-pipe was very good.

What do your regulations direct you to keep up; what pressure on the gauges?—15 inches.

And you had 21?—Yes, but the more vacuum we keep the better the brake acts.

Then you had 21 inches the whole way, till you got to the place where you tried to apply it?—At Wood Bank.

And there you found the automatic-brake did not bite?—No, I found it release itself too quick.

Why did it not release itself coming down the bank?—I do not know. It would not release itself on my engine as long as my small ejector was open. The vacuum seemed to escape too quick when I opened the valve.

Colonel Rich.—If there was ice in the vacuum-pipe he would only have to create the vacuum between the block of ice, which would be under the engine and his ejector, which would be short. He would not have to do it the whole way along the pipe. The curious part of this evidence is, this vacuum which slipped off at once at Wood Bank held all the way down the bank. He considers the small ejector kept it up, and it would no doubt do so in that short pipe.

Are you sure that you can work the vacuum up to 21 by means of the small ejector?—Yes, I am.

You can maintain it at 21?—Yes, if it is a good train, a light train; but sometimes we have had trains we could not keep that amount up in. I have known it take me all my time to keep 15 inches.

The Jury.—How do you account for that; is it the difference in the quality of brake-pipes?—I expect there might be some small leakage somewhere in the pipes.

Colonel Rich.—There is always a leakage in these pipes, and that is what the small ejector is for—to maintain the vacuum.

How can you be sure, especially on a dark night, if you shut off that small ejector that you recollect to open it?—I never did shut it off only at Wigan.

You did at Wigan?—Yes, that is the only place. I do not know why you should do it at Wigan?—Because they have to break the train. We attach more carriages there, and we shut it off so that it shall not make a noise.

Mr. Errington.—Will you take note of that, because it is important. He shuts it off at Wigan because he breaks the train.

The Coroner.—Yes.

The Jury.—You added at Wigan equal to $3\frac{1}{2}$ vehicles; the train consisted of $11\frac{1}{2}$ vehicles, and when you left there were 15?—Yes, we made it up to 15 at Wigan.

The Coroner.—Now, gentlemen, if you would like to put questions to the driver this is a convenient opportunity.

The Jury.—In which pipe was it that you discovered the ice at Northampton?—The one betwixt the engine and the tender underneath the foot-plates.

Is that the same pipe in which about a pint of water was discovered on the morning of the accident?—Yes.

How do you account for the water being there on the morning of the accident?—I do not know only by the leakage from the small ejector.

Is it possible that the water found on the morning of the accident might have been an hour or two previous ice?—Yes, it might have been. It was $7\frac{1}{2}$ hours before that was examined.

Is this the first time you have heard of ice being found in the brake-pipes?—It was the first time with mine at Northampton.

But you have heard of it with other drivers finding ice in their pipes?—Yes, I have heard of some of them.

On many occasions?—Not so very many.

But you do know they are liable to get frozen sometimes?—Yes.

Colonel Rich.—Would you ask him what the effect is when they do freeze.

The Jury.—What is the effect when there is ice in the pipes?—It blocks our communication betwixt the engine and the train.

Colonel Rich.—But the effect on the train?—I have no power on the brakes if once froze up.

What do the brakes do. What did they do with you at Northampton?—The brake went on at Northampton.

Is not it absolutely necessary that it should go on?—Yes, it ought to have gone on. As soon as ever the vacuum is gone it ought to have gone on.

Mr. Errington.—When the vacuum is gone he says.

Colonel Rich.—The vacuum must leak off if there is ice in the pipe. If the pipe is blocked with ice the vacuum must go. When the vacuum has gone in the pipe the brake goes on.

Mr. Errington.—Quite so, the pipe or something else may freeze which has not been touched upon yet.

The Jury.—About this order for shutting off your small ejectors at Wigan, that is a local order you tell us?—There is no order at Wigan.

Where is it then?—Rugby.

Is there any order for doing that at Shap?—No.

What did you say about the man going on to your engine and closing your small ejector at Shap—a bankman?

Mr. Errington.—No, that is at Rugby.

The Jury.—There is no order for anybody to get on your engine at Shap?—No.

Nobody was near your engine at Shap?—No.

Where you off your engine at Shap?—Yes, oiling.

The fireman was off as well?—Yes.

Did he do anything to the brake at Shap?—Nothing whatever.

He did not touch it?—No, no further than he was assisting to stop.

Was there any frost at Shap that morning?—Yes, there was.

It was hard was it?—Yes.

Was there any ice?—Yes there was ice.

Could you see any ice by the side of the railway or in the fields?—Of course I had not time to look, I was occupied in doing my work.

It was dark?—Yes.

Was the frost hard enough to freeze any water if it had been left standing on your tender that night?—Yes.

If you had had a bucket of water on the tender would it have frozen?—Yes, it would.

Have you ever found any ice sticking to the drip-valve of your engine or any other engine?—Only on one occasion.

The Coroner.—You mean you have found it on one occasion?—Yes.

The Jury.—Do you always keep the small ejector open when running?—Yes.

You always keep it open?—Yes.

Is there any condensation of steam from the ejector when it is blowing?—Yes, there is a quantity of steam blowing from the small ejector.

Does any of that steam condense into water?—Of course I cannot say how it affects the pipes, but we find water in the pipes frequently.

If the steam condenses into water where will that water go to?—It cannot get out of the pipes.

Can it get out of the pipes?—No, I do not think it can.

If the drip-valve acted all right would not the water drop out on to the railway?—Yes, it ought to do, but there is always a certain portion in.

There is always some in?—Yes.

But if the drip-valve became frozen where would the water go to?—It could not get away.

It could not get out?—No.

And of course it would go into the train-pipe?—Yes.

Would it in time fill the valve between the engine and the tender?—It would be there between the engine and the tender; the water would be there.

There would be water in that pipe, and if there was frost it would freeze there?—Yes.

If a quantity of water was slowly turned into ice would you expect your vacuum-brake to act?—It would stop my power to put it on from the engine.

You would not expect it to act at all?—No, I should have no power over it whatever.

If the pipe was full of ice with the small ejector blowing all the way from Shap Summit would your vacuum-gauge register the amount of vacuum say from 21 to 25 inches?—Yes.

It would do that?—Yes.

And you kept it blowing all the way?—Yes.

You did not stop it?—No, I never stopped it, I never shut it off only at Wigan on that journey.

Where were you when you first tried the automatic vacuum-brake?—At Wood Bank.

And where were you when you put on the steam-brake?—Betwixt Upperby Bridge junction and Upperby junction.

Would that be opposite the Lancaster sheds?—Before I got to the Lancaster sheds.

When you put the steam-brake on the engine the vacuum-brake should have acted on the whole train if it had been all right, should it not?—Yes.

But it did not?—Well, it would act on the whole train and the engine and tender as well.

If it had been all right?—Yes.

But it could not do that when you put it on?—No.

You are sure you did put it on there?—Yes, I am positive I put it on there.

How far would you have run from the place where you put on the steam-brake, if the vacuum-brake had all been in working order?—I should not have run far if I had allowed it to stay on.

Would you have run to St. Nicholas bridge?—No, I should not. I could have stopped if the brake had acted as it did at Preston, before I got to Upperby Bridge junction from where I applied it.

Easily?—I could.

What was the weather like at Wood Bank that morning. Was there any rain or snow; were the rails greasy or were they dry?—The rails were very greasy and had been slippery the biggest part of that morning.

There had been sleet and rain?—I do not know whether there had been any rain.

Was there any sleet?—Yes.

You are sure there was sleet?—It was a little hazy.

Did you see any on your windows?—No, I never noticed any on the windows.

You whistled for the guards to put on the hand-brakes, did you not?—Yes, passing the steam-sheds.

And you reversed your engine?—Yes.

Now answer me this: Could you have done anything more than you did to have stopped the train that morning?—No, I did all I possibly could.

You could not have done anything more?—No, I used all the power I had got, and I could not have done anything more than I did. I kept the brake hard on while I stuck to the engine.

Did you ever speak to the fireman on that morning? I never spoke to him only to tell him to put the brake on and open the sand-box. I never said anything to him after that.

And he did as you told him?—Yes, of course. I had got the steam-brake on, and his hand-brake was powerless for that matter.

Presuming there had been no continuous-brake that morning, and you had been relying on the hand-brake, where would it have been necessary to shut off steam and apply the hand-brake?—Before we got to Wreay.

And that would have made a considerable difference in the time of your running between Carlisle and Perth?—Yes, it would.

Presuming you were relying on the hand-brakes entirely could you accomplish the journey from London to Carlisle in seven hours?—I do not know I am sure.

What is your idea about that?—I think it would be a very difficult job, because there would be many places we should have to reduce speed to be sure of stopping.

Unless you had the continuous brake the journey from London to Carlisle could not be accomplished in seven hours, could it?—Well, I do not think it could. It would not be very safe the speed we run at, if we had not some power.

I want you to answer this distinctly. There was frost at Shap, and it was freezing all the way down Shap Fell?—Yes.

It was frosty all the way down to Carlisle?—Yes.

You are sure of that?—Yes, I am.

Examined by Mr. SAUL.

As you have been asked about the hand-brake I suppose you are quite aware that the amended rule 293, which was read the other day, specially applies to Carlisle station. This is the part of 293 that I am drawing attention to. "Engine-drivers must satisfy themselves that the continuous brake is in proper working order before starting at each station where any vehicle is attached or detached. It must also be tested before passing the distant-signal of any terminus or other principal station at which the train is to stop, and the speed of the train must be reduced by it, and engine-drivers must always enter

"such stations, or a dead end bay at any station, at such a speed as to enable them to stop the train at the proper place by the application of the ordinary hand-brake only, and guards must watch the speed of trains and assist the engine-drivers by the use of the hand-brake when necessary." That applies to terminal stations?—Yes.

You are aware that you are specially desired to observe that rule for Carlisle?—Yes.

Now with regard to the ice; supposing there was ice in the pipes, your ejector would only act upon so much of the pipe as was between the ice and the ejector itself?—That is all.

So that you could run up your gauge very quickly?—Yes.

What would be the effect on the pipes beyond the place where the ice was? What would be the effect of your being unable to act upon the pipes beyond?—I cannot say.

What would you expect?—I cannot say.

Would you expect the brake to go on?—I would if the guards were to release the valve. I should expect them to go on; I should not expect them without.

Supposing you were unable to maintain the vacuum by reason of ice between you and the greater part of the train, would not you expect the pipe to gradually leak?—I think it ought to do; it ought to gradually go on.

Then in that way the brake would gradually leak on?—Yes.

You would expect it to gradually leak on?—Yes, I should.

If that happened, your attention as driver would be called to it by the fact of the weight on the train; the drag on the train?—Yes.

So that if your ejector was only acting on a small portion of the pipe, and ice stopped it from acting on the rest, you would expect that the vacuum would gradually leak out, and that there would be a drag on the train in consequence?—Yes.

Which you would feel?—Yes, I should expect it.

And it would be then your duty to communicate with the guards?—Yes.

Now as to the water in the pipe. Do you know of your own knowledge whether any water was found in the vacuum-pipe under the engine that morning?—Only from what I have heard.

Not of your own knowledge?

The Jury.—But it is an admitted fact that water was found in the pipe.

Mr. Saul.—Yes, but I am now asking whether it is of his knowledge or whether he heard it; that is all. He answered as if he knew it himself, and I think he was not in a state after the accident to know.

The Coroner.—This is the evidence on the point, Mr. Trevithick.

Mr. Saul.—The evidence of Mr. Trevithick is quite clear, but the evidence of Rumney, as he gave it, was as if he knew it himself.

The Jury.—We have a latitude in a coroner's court which we have not in another court.

The Coroner.—It is in evidence and duly sworn to by Mr. Trevithick. He says, "I found about half a pint of water in the vacuum-pipe between the engine and the tender. It was in the lower portion of the pipe."

The Jury.—Is that correct—a pint and a half?

The Coroner.—He says, "I found about half-a-pint."

Mr. Saul.—It is very important with regard to the remark made by the foreman just now, that the strict rule of evidence should be observed here, for this reason, because of the warning which the coroner gave this man, that he was at liberty to refuse to answer any questions which he thought would incriminate himself. It would be very unfair to allow any evidence to be given by him of hearsay.

The Coroner.—You see it is in direct evidence by Mr. Trevithick. This man can only speak to what he had been told. He did not see it himself.

The Witness.—I asked the question whether any ice was found, and I was told they found water.

The Jury.—I think I understand you to say that it is possible that water might have been ice?—Might have been ice. I did not say it might have been ice before.

Examined by Mr. ERRINGTON.

Is this your first accident?—Yes.

I notice that at the first hearing before the coroner, Mr. Jamieson said he had frequently had occasion to caution drivers for coming in too fast. Nobody thought of asking you if he had ever cautioned you; did he ever caution you?—No; I have never been cautioned in going into any station.

The Jury.—I think Mr. Jamieson said he had not had occasion to do so recently.

Mr. Errington.—I am reading from the depositions.

The Coroner.—I will tell you what Mr. Jamieson said, "I am station-master of the Citadel station. I have had occasion to caution engine drivers against coming into the station too fast, but not latterly. I have not had occasion lately to report a case."

The Jury.—What he said was since they got improved appliances for stopping the trains quickly.

Mr. Errington.—My question is a general one. If he ever had occasion to caution Rumney, I do not care whether it is since he had new appliances or not. Did he ever caution you?—No.

Were you ever cautioned by any station-master?—No.

Were you ever reported by any station-master or any other person for over-shooting, stopping too short, or misconduct as a driver?—No.

Did you receive any warning at Crewe that the brakes had not been acting properly further down the line?—No.

Assuming that you had been warned at Crewe, would you have adopted any precautions on approaching Wood Bank?—Yes; I should have adopted precautions everywhere.

What would you have adopted if you had been cautioned?—I should have shut off earlier and applied the brake earlier.

Where did you shut off steam on the morning of the accident?—Coming out of the cutting at Wood Bank, before we got to Wood Bank distant-signal.

Where would you have shut it off if you had thought there was any danger?—I should have shut it off at Wreay very likely.

I notice this rule tells you, "It must also be tested before passing the distant-signal of any terminus." Where is the distant-signal for the Carlisle terminus?—It lies on the bank this side of the steam-shed.

How far from Wood Bank where you did test it?—I cannot tell you that.

Tell me as near as you can?—Some one will have an appendix which will say the exact distance.

How far is the distant-signal from St. Nicholas Bridge?—I should say about 700 or 800 yards.

Is it this side or the other side of the steam-sheds?—It is this side of the steam-sheds.

The jury know the *locus in quo*. Then you tested your steam-brake very much earlier than you need have done according to this rule?—Yes, I did.

I see the Carlisle station is treated as a terminus. In addition to shutting off steam when you came up to near Wood Bank, what other precaution did you take to prepare for the eventualities?—I shut off steam and applied the automatic-brake on the bank.

But before that?—I put on the steam-brake and reversed the engine.

Have you any locking apparatus for the reversing gear?—Yes, there is a locking apparatus for the lower pressure.

What did you do as regards that locking apparatus?—I unscrewed that as soon as ever I shut off steam.

As soon as ever you shut off steam you unlocked that?—Yes, and that is always my practice.

What is your practice on approaching a terminus?—To unlock it as soon as ever I shut off steam.

And that is the practice you adopt at all dead end stations, and when you are running into a terminus?—All stations where I am going to finish such as Crewe, Carlisle, or London.

And you did it on the morning in question?—Yes, I did.

Did you put it on when going into Preston?—No, I did not.

Why not?—Because I was not going to finish with the train, and of course I left that locked.

But on approaching Carlisle, being a terminal station, you unlocked this reversing gear?—Yes.

That was before you found the brakes were not acting?—Yes, it was.

As to this vacuum you may show a vacuum on your engine, and you may show a vacuum in the guard's van, but have you any test to show you whether the ball-valve is working under every carriage?—No, I have not.

Then unless this ball-valve is in perfect working order, that is the ball-valve between the train-pipe and your carriage, your gauge may show you that you have 15 or 20 inches, yet if it is not in working order you are not able to put on the brake?—No, I should say not.

You should say not, but probably you do not know?—Of course I am not properly prepared to answer such questions.

All that you are prepared to say is that your gauge simply shows the amount of vacuum in your gauge-pipe?—Yes that is all, I had never seen that ball-valve.

And do not know that it was frozen at Euston?—No, I do not know anything about it.

On approaching Shap Summit you say you applied the brake?—Yes.

Are you prepared to say the automatic-brake went on all your vehicles?—No, I am not; it did not require very much to stop the train.

Why?—Because we were first coming out of a bank 1 in 75, and we were stopping just as we got out of the bank.

You have no reason to suppose, and no evidence to give to the jury, to show that your automatic-brake acted on the whole of the vehicles at Shap Summit?—No, I have not.

Colonel Rich asked you about shutting off the small ejector at stations, and you did shut it off at Wigan because you had to break the train there?—Yes.

Therefore you had to admit air into the pipe?—It was immaterial whether I shut it off or not, but I did so.

Then when the train was made up again to 15 vehicles, you opened the small ejector again?—Yes, as I got the signal to create the vacuum.

And you did create the vacuum?—Yes, and then I got the signal to say it was all right.

And off you went?—Yes.

This leaking off that Mr. Saul has been asking you about is merely the leaking off in the train-pipes?—Yes.

It does not follow that the leaking off would have any effect whatever if it was freezing on the ball-pipe under the carriage between the cylinder and the train?—No, I do not suppose it would; if it was freezing it could not have any effect on it.

Are you aware that after the accident, when the carriages were examined, the automatic-brake was found on two of them?—I was told so.

You did not know of your own knowledge?—No I do not know anything about it.

Can you explain, then, how it comes that the automatic-brake was found on two of the carriages and not on the rest of them?—No, I cannot.

The Jury.—Are the drivers fined sometimes for not keeping time?—I do not know; I do not know as I have known them fined for not keeping time.

Mr. Errington.—Were you ever fined?—No.

The Jury.—Seeing that you cannot run in time with the hand-brake, what would the Company say if you lost time, which you must do by working the hand-brake only, what would be the result, what would the Company do to you?—Of course we should be asked the question why we had not kept time.

What is the result. Is there any fine or anything of that sort?—I have never known anyone fined, I have never been fined.

Colonel Rich.—From the time you took charge of the train at Crewe, until you got to Carlisle, when you could not stop, did you find your brakes act properly, and did you find your train in good order?—Yes, I never found any difficulty at all whatever.

Mr. GEORGE WHALE SWORN.

[The Coroner read the following statement]:—

"George Whale, on being duly sworn, said as follows: 'I am assistant locomotive superintendent, and am stationed at Crewe. I arrived at the scene of the accident at the Citadel station at 4.25 p.m. On the same day I took the evidence of some of the men, and in the presence of Mr. Turnbull of Euston, and Mr. Williams of the carriage department, I tested the following vehicles:—No. 30 Caledonian tri-compo, No. 66 West Coast 3 brake, No. 147 West Coast compo, No. 162 West Coast brake-van, No. 267 West Coast sleeping saloon, and No. 128 West Coast compo. These were all runable, and were tested both in motion and at rest, and the automatic vacuum-brake acted perfectly on each of them. In the meantime I had given instructions for the pipes and apparatus to be taken off the following vehicles, which were not runable, No. 303 West Coast third, No. 114 West Coast sleeping, No. 111 West Coast sleeping carriage. I examined these, and as far as I could find out, the pipes were perfectly free, and all the brake apparatus in good working order. I saw nothing about them which would prevent their acting. This examination took place on the 6th March, and on the same day I examined the whole of the apparatus belonging to the engine 515, and found everything in good order, large and small ejectors, release-valves, and brakes. There were four vehicles which I had no opportunity of examining, as they were sent on to Stranraer on the morning of the accident, and have been in use ever since.'"

Examined by COLONEL RICH.

Supposing that ice had been formed in the pipe where the water was got out, which was between the engine and tender, and supposing that ice was sufficiently large to fill the pipe and prevent the air passing, what would have been the effect on the train running from Shap to here?—The brakes would have gradually leaked on because the driver would have been unable to maintain the vacuum by means of the small ejector.

And it is necessary to maintain the vacuum to keep the brakes off?—Yes, we tested them the other day, you may remember, by running with the small ejector shut off and not maintaining the vacuum, and the brakes gradually went on.

They held on till the wheels began to fire?—Yes.

How far did we go that time?—We ran from Plumpton to Wreay, but at a gradually decreasing speed. If you remember we shut off the small ejector at Plumpton.

We did it going the other way too?—Yes, we did it from Southwaite to Plumpton. Of course we could feel the effect of the brake on the engine; we could feel the drag.

The rails were in very good order—very dry?—It was a very good day for stopping. A dry rail.

A train would go much further on a night such as the night of the accident?—On a drizzling night such as it was it would have gone much further.

Is it the case that with any failure of the automatic-brake, it is so arranged that the brakes must go on. If a train breaks in two or anything, the whole virtue

of the brake is that the failure of the thing makes the brakes go on?—Yes.

Mr. Errington.—Any failure?—Yes.

The Jury.—That is if the brake throughout is in perfect order.

Colonel Rich.—If it goes out of order, then the brake goes on.

The Jury.—At one particular point?

Colonel Rich.—No, any place.

The Witness.—If you block the pipe up, it is practically like shutting the small ejector; the brakes go on. If a carriage breaks away and the pipes become released, the brake goes on. Of course, if all the apparatus drops off the carriage on to the ground, then it does not go on.

Mr. Errington.—We take it it is properly fixed.

The Jury.—Is it possible for the condensed steam from the engines to get into the train pipe from the engine and tender?—It is possible if there is a leakage from any of the valves either from the small or large ejector for water to leak back into the pipe.

That is your experience?—Of course there is a drip valve provided.

Colonel Rich.—It does so as a fact?—Yes.

It is not only possible, but it does so?—Yes.

The Jury.—In the train pipe you have a piece of fine gauze wire, have you not?—We have had it on some of them experimentally, but it is not general.

Was it in this engine that Rumney was driving that day?—No, I do not think it was.

Mr. Errington.—Would a half-pint or from a half-pint to three-quarters of a pint of water be sufficient to fill the train pipe?—No.

Mr. Errington.—Fill the belly pipe between the engine and the tender you mean?—No.

The Jury.—To fill any one portion of the pipe?—No.

How much would it take to fill that pipe in any one place?—I have never tried the experiment, but I think it is a two-inch pipe, and I should think it would take a half gallon of water. The pipe between the engine and tender is sagged in that way (describing).

Colonel Rich.—Bellied?—Bellied, and to fill that pipe with water—take the centre of the pipe, the lowest portion of the pipe—it would take half a gallon, perhaps more. I will try the experiment some day.

The Jury.—If the train was in motion and there were three-quarters of a pint of water in that pipe, it would be slushing backwards and forwards, and would gradually freeze into a lump?—It would coat the pipe inside with a thin layer of ice.

And eventually stop it altogether?—Yes; it would if it had time certainly. That goes without saying. If you had enough water and enough time, and enough frost, you could eventually stop up the pipe.

Are you not aware of your own personal knowledge that ice has often been found in the pipe, and has prevented the vacuum-brake from working?—No; I am not. I have known a few cases, but not many cases.

But you have known a few?—A few cases; two cases I think I know of, and that is about all.

That is all you know of yourself?—Yes.

Can you explain to us the numerous failures of the automatic vacuum-brake reported by your Company to the Board of Trade through it being blocked up with ice?—There are not numerous failures reported to the Board of Trade by our pipes being blocked up with ice.

In the Board of Trade returns (and there are some in the room I understand) you say that your pipes have been blocked up with ice in this place and other places?—I have got a paper here that I believe has been circulated by somebody showing the cases. It has been circulated to some of our drivers and firemen as well as other people, I believe; but a great many of the cases are simple vacuum, not automatic vacuum at all.

Mr. Errington.—Take the one of the 11th February 1889.

The Coroner.—If you will let Mr. Blain pursue his line of cross-examination it would be more convenient.

The Jury.—That is a copy of what is given to the Board of Trade (exhibiting a document)?—Yes.

Are you sure of that?—I would not swear to it, but I take it nobody would publish and head a thing like that unless it was true.

You have not compared that with the Board of Trade returns proper yourself?—I have not.

Have you got the proper returns with you?—I have got some. I have got four half years.

You cannot explain to us how it is that so many failures have been reported to the Board of Trade?—They were not failures of the brakes; they were delays. The brake did not fail to act. You cannot call them failures. They were mere defects in the brake, delays to trains.

You have not told us what those delays were caused through. That is what I want to get at?—You can see for yourself here. You have had one of those things.

Am I to rely on what that says?—I do not know.

Because it says "blocked up with ice"?—I cannot tell you whether you are to rely upon it at all, but if it is extracted from the Board of Trade reports I have no doubt it is correct, because the Company would have reported it to the Board of Trade. The Board of Trade would not invent the cases.

The Board of Trade returns themselves say "blocked up with ice"?—But if you read the particulars you would see that they were delays. Here is one: "The 12.7 p.m. Crewe to London was "delayed at Willesden owing to the automatic pipe "being out of order."

There might have been an accident from that delay?—Not at all; there need be no accident through the delay, because all kinds of brakes are liable to delays of this kind. If you look at the Board of Trade reports you will see other brakes besides the vacuum-brakes have delays and defects.

How do those pipes get blocked up with ice?—They could not be blocked up with ice unless there was water in the pipe of course.

And something more than that?—Frost of course.

Colonel Rich.—I think it will clear this examination of yours very much if you will ask or let me ask Mr. Whale what the effect of this ice which formed the subject of those reports on the train was. What was the effect on the train?—The effect was to cause delay. It caused the brake either not to be able to be released or not to go on.

That is to say, put it on and you could not get it off?—Quite so.

The Jury.—You see what I am driving at is this: Sometimes when there is ice in the pipes the brakes will not go on.

Colonel Rich.—No; there is no case of that kind. That is what I say, you are trying to confuse the jury in this case by mixing up simple brake with automatic brake. These are returns of simple brake, which is exactly the opposite to the automatic brake. You are also trying to confuse the case by talking of ice being a danger. It is a danger in stopping the train, because the brakes get on and you cannot get them off. That is the plain fact. You are trying to confuse the matter. I am speaking now to prevent this confusion. If you read them out you will find they are both returns of simple brake and of automatic brake, and you will also find that every return of the ice in the automatic brake puts the brake on.

The Jury.—Yes, I understand that.

The Witness.—There has never been an instance of the ice in the automatic brake preventing the brakes going on.

Mr. Errington.—Before you commit yourself to that opinion, let me draw your attention to the return of the 11th February 1889. "The 3 p.m. train from "Holyhead to Crewe overshot the platform at Llan- "dadno Junction owing to the failure of the automatic "vacuum-brake."

Colonel Rich.—I think I inquired into that myself, and I think the failure was that the man thought he was working the automatic and it was simple.

Mr. Errington.—Then it was not correctly returned.

Colonel Rich.—With all the returns you must recollect that all cases are not cases investigated.

Mr. Errington.—Not by a Government inspector?

Colonel Rich.—Not always. Several cases have been put down which were not investigated, and we found out since they were not so. These cases were not all investigated. It is just a simple return of the foreman who reports to his officer, and it has been sent in as such, and there has been no accident caused. If there was an accident it would be inquired into. They are simply returns made, and they have never been verified.

Mr. Errington.—Is it not peculiar the train should have overshot the platform at Llardudno?

Colonel Rich.—That is one of the most common accidents we have. A man forgets to shut a cock and it overruns.

Mr. Errington.—Then this return is not to be relied on?

Colonel Rich.—No, it is not to be relied on as fact. If I investigate a case and report upon it I may not be always perfectly right, but these are cases which are not investigated at all.

The Jury.—You see it is very misleading, because that is what I was wanting to point out. In some instances it is stated here.

Colonel Rich.—I think there is not much that is misleading. Someone sent me the same returns this morning, and I was reading them about two hours before I came in here, and I saw in the whole of them two cases where the ice had been, and with one exception the brakes went on.

The Witness.—That is so, Sir.

Colonel Rich.—This is a case where the brakes would not go on, and the consequence was the accident.

Mr. Saul.—And that was a case of a simple vacuum.

Colonel Rich.—Yes.

Examined by Mr. SAUL.

As a matter of fact in every case where ice has lodged in the automatic vacuum-brake pipes, that has the effect of stopping the train?—Yes.

Not of causing it to overshoot?—No.

If I understand you correctly, there has never been a case of a train breaking away or overshooting a station when it was supplied with the automatic brake, and the automatic brake was stopped by frost?—No.

The special virtue of the automatic brake is this, that whenever there is an accident to the brake, whether by breaking away of carriages, or by stoppage of any part of the pipe, the effect of it is to stop the train?—Yes, to put the brake on.

That is the special virtue of the automatic brake as opposed to the simple vacuum?—Yes.

I think perhaps, in justice to Rumney, I might ask this question: Will you tell us what Rumney's character is?—Very good indeed. He is a first-rate man. He has been more or less under me since the year 1867, and I have not a single word to say against him. He is a steady, hard-working, reliable man.

Cross examined by Mr. ERRINGTON.

Would you consider him one of your best drivers?—Yes, certainly.

Such a man as a Company like the North-Western would entrust with such an important train as this?—Yes.

The Jury.—Then we may take it in this case it was the brake that failed, and not the man?—I do not say that.

The Coroner.—You must not anticipate your verdict. You will have to spend some little time over that by-and-by.

Mr. Errington.—You did not make the examination of these carriages until some hours after the accident?—I did not get here till the afternoon of the day.

When might you make the examination of, say, the ball-valve between the cistern and the train pipe?—The examination of the apparatus of the carriages that were not runable was made on the 6th.

Runable?—On the 5th. We had to pull the apparatus down, and it took some little time.

I want to get it before the jury that it was not made on the same day?—No; I did not get here till the afternoon of the same day.

You have heard Rumney give his evidence as to what precautions he took to pull up the train?—Yes.

Have you any fault to find with them?—Well, if he did all he said he did, the train would have pulled up.

I beg your pardon?—In my opinion, if he did all he said he did, and did it where he did it, the train would have been pulled up.

That puts us at issue. You assume that the whole apparatus was in working order?—Yes.

Assume that the ball-valve between the cistern and the train pipes was frozen, what then?—It would have no effect on the working of the brakes.

Do you mean to tell the jury that if the ball-valve was frozen, and permitted the air to go to the top side of a cylinder, the brake would go on?—Yes.

It would?—Yes.

Will you swear that?—Yes.

Listen to the instructions, but just let us get the thing a little clearer?—What instructions?

Under each carriage there is a cylinder?—Yes.

Which communicates by a little bent tube with the train pipe?—Yes.

To take the brake off, he applies the ejector?—Yes.

What effect has that on the cylinder?—It draws the air out.

Out of both top and bottom?—Yes.

It draws the ball forward after exhausting the vacuum, does it not?—Yes.

Now assume that that ball, instead of falling back to its place as it should do, is prevented by some obstruction or some frost when the air is admitted into the pipes; assume that the ball not being in its place, the air goes to the top of the cylinder, do you mean to tell the jury that the brake would go on?—Yes.

You swear that?—Yes.

Do you not know that it is the vacuum at the top of the cylinder, and the air coming in at the bottom, that causes the brake to go on?—That keeps it on for any length of time.

And causes it to go on?—No.

Listen to this?—I do not know what you are reading.

I am reading from "the vacuum automatic brake" as issued by the Company?—What Company, not the North-Western Company, I think?

No?—This is nothing to do with us.

I see you have got something very similar?—Yes, but it has nothing to do with our brake.

Will you look at that and tell me if it is not a facsimile of your ball-valve (*handing ball-valve to witness*)?—No, it is not.

Where does it differ?—(*After examination.*) The ball is practically the same, but ours is a five-way cock, it is not a valve like that.

Do you mean to say that is not altogether independent of the five-way cock?—You mean the ball-valve.

That is the ball-valve. Do you mean to say that is not altogether independent of the five-way cock?—Yes.

Is not that a facsimile of the ball-valve on your carriages?—It is something similar.

Will you swear it is not exactly the same?—It is a ball-valve, and a ball-valve is a ball-valve all the world over.

You first of all began by saying it was not the same thing, now you say it is like it; I want you to swear if it is not practically the same?—I was speaking of the whole apparatus, the whole thing; I say it is not the same, but the ball-valve is similar.

That is the ball-valve?—Yes.

Is not that similar to your ball-valve?—Yes, it is, but we have a five-way cock.

You first of all began by saying it was not?—I was speaking of the whole of the apparatus.

I put that into your hands, now listen to this?—What page?

Page 7, at the bottom. "Brake cylinder; the action of the cylinder is as follows:—The air is drawn out through the train pipe from the bottom of the piston direct and from the top by passing a ball which it forces up the incline of the spindle; when all the air is withdrawn the ball rolls down the incline and on to its seating. To apply the brake the air is let into the train pipe, and it then passes to the underside of the piston, and being prevented from entering to the top by the ball, lifts the piston and so applies the brakes with any amount of force according to the quantity of air let in." That prevents it breaking the vacuum at the top, does it not?—Yes, somewhat.

What?—It is a question of time, as I told you.

A question of what?—Time.

There are a quantity of practical men present. Do you mean to say on your oath that if the vacuum at the top is broken the brake goes on; now be careful?—The brake goes on.

Even although there was no vacuum at the top?—No, not if there was no vacuum at the top.

Then I may take it if that brass ball is prevented from rolling into its seat, and the air, when the ejectors are shut off, goes both top and bottom, the brake is useless?—No, it will still go on.

Did you ever try it?—No, I have not tried it.

How do you know?—I know from practical experience.

Did you ever try it?—No, I have never tried it. I have had no reason to try it.

Why not?—Because I have had no reason to try it.

Are we agreed upon this, that if by some unfortunate circumstance that ball does not get back to its seat, and prevents the air exhausting the vacuum at the top of the cylinder, it would tend to the brake not acting?—It would have a tendency that way.

Now I will take you to the evidence. The evidence is that two of the carriages had brakes on, is it not?—It was given in evidence by some carriage examiner, I think.

The Coroner.—Potts said so.

Mr. Errington.—He said the tyres of the wheels and also the blocks were warm?—He said so.

And he also said he took the brakes off?—I think he said that.

That would show you that on those two carriages, at any rate, the whole apparatus was in working order?—Yes, if his evidence is to be relied on it would.

Do you doubt it?—We have to take a great deal of his evidence *cum grano salis*.

You take it *cum grano salis* because it is against you?—It is not against me.

The Coroner.—The evidence is given and the jury will judge of that.

Mr. Errington.—We have it, the apparatus of those two carriages was in perfect order, because taking the evidence the brake was on. The evidence is, on none of the other carriages was the brake on. Does not that tend to support this only theory, that the ball-valve in all the other carriages was out of working order, but in perfect working order where the brake had gone on according to your own admission?—It does not at all prove that.

What does it prove?—In the first place I should like to know, before expressing an opinion, how long after the accident it was that those brakes were examined.

At once. A man was waiting to examine on the platform, and followed the train down?—Well, I do not believe it.

The Coroner.—The evidence is a minute and a half afterwards?—I should have thought he would have had something more to do than to examine the brakes.

Mr. Errington.—He says he did it. You have got it that a minute and a half afterwards he found those two brakes on and the tyres hot?—Yes.

Does not that point to the opinion that the only reasonable theory for this accident is that the ball-valve in all the other carriages had got by some unfortunate circumstances fixed or frozen?—It does not at all follow that the ball-valve was wrong in all the other carriages.

Can you account for any other thing being the cause of the accident?—I cannot account for it in that way.

Now let me take you to the evidence. The evidence is that the train pipe from end to end was in perfect working order, because we find that at Upperby junction there was in the end guard's van 15 inches of vacuum?—So the guard says.

We find in Downie's van that there was the same?—Yes.

The Coroner.—Armstrong's van.

Mr. Errington.—We find that on passing Wood Bank the gauge went down three inches, which satisfied the conductor that the engine-driver was testing the brake. He put his head out of the carriage. He thought they were running too fast. He turned round to put on the brake, when he found the gauge had gone down to zero?—Yes.

Rumney says he put the brake on. Does not that show that the train pipe from end to end was in perfect working order?—Yes, if it is correct, and it also shows the ball-valves were in working order too.

How is that?—Because the brakes ought to have gone on.

It shows the valves were in working order because the brakes should have gone on?—Yes.

Do you swear that? Do you swear because the train pipe from one end of the train to the engine is in perfect working order, that shows the ball-valves are in perfect working order?

Colonel Rich.—Excuse me, so as to prevent this question being confused with the jury. There is a gauge on the reservoir as well as a gauge on the pipe.

Mr. Errington.—What does that show?

Colonel Rich.—It shows they were both recording what the vacuum was. If this thing had been frozen up and there was no vacuum it could not have recorded in the gauge that there were 15 inches of vacuum.

Mr. Errington.—The gauge that records 15 inches of vacuum does not communicate with the cylinder; it communicates with the train pipe.

Colonel Rich.—There are two gauges.

Mr. Errington.—We are talking about the vacuum gauge.

Colonel Rich.—There are two vacuum gauges; one communicates with the reservoir and the other with the train pipe, and the guards assert they were showing either the same amount of gauge or very nearly so. If there was a vacuum in the reservoir that ball must have acted. You have two gauges, and at the present moment you are attempting to show that there are not two gauges.

Mr. Errington.—I beg your pardon, I admit there are two gauges.

The Witness.—There is only one on the engine.

One on the engine which shows the two gauges?—There is only one on the engine and two in the guards' vans.

Colonel Rich.—If you give the guards' evidence as a whole to the jury instead of a part you will show that those gauges, one on the reservoir and the other on the pipe, showed the same amount of vacuum, and they could not have shown the same amount of vacuum if this ball had rested in the air so as to let the vacuum get expended. I say you should give the guards' evidence as it is and not partially.

Mr. Errington.—I admit that.

Colonel Rich.—You are only giving it partially.

Mr. Errington.—I am taking the evidence of Downie.

The Coroner.—It would be better to confine yourself to questions, Mr. Errington.

Colonel Rich.—I wish Rumney to have every possible advantage, but I do not wish the jury to be confused by these technical questions, which it is very hard for us always to follow and to understand thoroughly, and evidently you cannot follow it, because you said there were two gauges on the engine.

Mr. Errington.—I have got instructions here which show me there are two gauges on the engine.

Colonel Rich.—You are using a book which does not belong to the London and North-Western at all; and allow me to tell the jury that the North-Western system of automatic vacuum-brake is not the same as that. It is worked differently, and I hope it will be the same as that one day, because I think it is a much better one.

The Witness.—If you will look at Downie's evidence you will see he says, "I saw that both the train pipe and the reservoir gauges were standing at 13 inches;" that is, both gauges in his van.

Mr. Errington.—He says, "We went the usual speed to Wood Bank, and between there and Upperby junction I noticed the vacuum gauge went back three inches. I did not feel the blocks rubbing. I applied my hand-brake, and I noticed that the vacuum gauge was standing at 13 inches."

Colonel Rich.—That is not the guard's evidence you are reading.

The Coroner.—That is the evidence of John Downie.

The Witness.—Then he says, "We ran all right at about the usual speed at Upperby junction, where I applied my hand-brake as I usually do; at the same time I saw that both the train pipe——"

Mr. Errington.—What are you reading from?—From his evidence.

The Coroner.—Not his evidence given before me. You may be reading his statement. That is what he swore on oath?—It is his statement to Colonel Rich.

Mr. Errington.—I am reading his statement on oath, which is a very different thing?—He says, "The train ran through the station at a speed of about 30 miles an hour, and on passing through I noticed the reservoir gauge was standing at 13 inches."

You also observe that he says, "We would run about 700 yards before the gauge showed 15 or 17 inches, after I observed it at zero." He observed it at zero when he attempted to put on his hand-brake, and he ran 700 yards and found it to go to 15 inches again?—It was frosty when we were at Shap, but I cannot say as to this between Crewe and Wigan. That shows that the driver was blowing up the vacuum, taking that evidence as correct.

It is on oath. Let me put this question to you: have you any reason to doubt the veracity of the conductor Downie?—I have not any reason to doubt the veracity of either the conductor or the guard, except in this, that we know perfectly well in cases of this kind you cannot get them to tell you exactly what occurred. There was no reason why they should watch this so narrowly. They did not know there was going to be an accident, as a great deal of evidence of this kind is produced by thinking over the case. You have to take evidence of this kind with a certain amount of suspicion. I do not mean to say for a moment that any of them wish to mislead you, but I have had some experience in these cases, and other gentlemen around me have the same experience, and we know perfectly well that you have to think these matters over.

That applies to both sides?—To both sides, if you like. I am not giving evidence as to facts; I was not there.

Let me draw your attention to the evidence of the fireman. Does not he say that from the fact of there being a sniffling noise underneath the tender he was

satisfied that the driver was creating a vacuum?—No, the sniffling noise would be the destroying the vacuum, letting in air.

Have you read through the evidence of the guards, and the fireman, and Downie and Rumney?—I have heard it and read it too.

Does not it satisfy you that the brake was attempted to be applied at Wood Bank?—I do not say the brake was not attempted to be applied at Wood Bank; I dare say it was.

Does not it satisfy you that, finding he could not put the brake on, he attempted to create vacuum again?—Yes, to take it off.

To create vacuum again?—When he should not have done so.

He found the brake did not act?—Yes, and then he attempted to take off the brake by creating a vacuum.

Exactly, and put it on again. Was not that a proper precaution for him to take, if he found the brake did not act to create vacuum, and try to put it on again?—No. At Wood Bank, if he found the brake did not act, what he ought to have done was to have gone to the hand-brakes and steam-brake.

That is what he did?—Yes, but I am afraid it was nearer Carlisle than what he says.

Have you got any evidence that it was?—No, I have no evidence of course.

Are you aware when passing the steam sheds one of your own men saw sparks flying from engine wheels?—It is in evidence that the signalman saw sparks.

No one of your own men?—No, there is no evidence to that effect. I have not seen one of our own men.

Colonel Rich.—It is right to say there may be a little confusion here. There was evidence given before me that can be got at again if it is required, but was not given before the Coroner, about the two gauges. I think you have dropped into that mistake. I was not present when the evidence was given before the Coroner, but I think evidence about the two gauges was not given before the Coroner.

The Witness.—It is mentioned in Downie's evidence.

Mr. Errington.—That is where I got it from.

The Coroner.—Mr. Errington is using for this purpose a copy of the depositions which were taken before me and signed by the witnesses.

The Witness.—The reservoir gauge is mentioned in Downie's evidence.

Mr. Errington.—I must ask you again, Mr. Whale, do you mean to tell the jury that when Rumney found that the brake was not acting it was not a proper thing for him to create vacuum, and attempt to apply the brake?—Certainly not.

Then you wish to put it to the jury that a man finding the brake does not act must take no means whatever to make it act?—He ought not to have required the vacuum-brake to stop at that station.

Why?—According to the rules which have been read to you.

Did you hear that the distant-signal?—Yes, I know all about that.

You say Rumney was approaching the station at too great a speed?—Yes.

Where is the distant-signal for the Carlisle station?—Testing there does not mean he is only to begin to pull up his train at the distant-signal approaching a station like Carlisle.

Will you show me the rule?—There is no rule as to where a man is to shut off steam at every station on the line, because the local circumstances vary at every station.

Do you find fault with him for shutting off the steam where he did?—No.

Did he shut off steam at a proper place?—I generally find when I am running with them they shut off steam earlier than Wood Bank for a train like that.

Where would you shut it off; before you get to the Wood Bank distant-signal?—Yes.

He is told to test his brake before he gets to the distant-signal?—Yes.

How far is it from Wood Bank to the distant-signal?—A mile or more.

Then we may take it, according to the rules laid down for his guidance, he tested his brake before he got to where, according to the rules, he should have tested it?—Yes, according to his evidence; you know he ought also to test it at the distant-signal from the station according to the wording of that rule, but he is not to wait until he gets to the distant-signal from that station before he should attempt to pull up his train.

I am asking you when he first tested his brake at Wood Bank; you admit he tested his brake fully a mile further away from home than he was obliged to do, according to rules?—Yes.

Having tested his brake and found it did not act, do you tell the jury on your oath that he was wrong in attempting to create vacuum again?—Yes, he was under the circumstances. On approaching a station such as Carlisle he had far better have left it alone, and trusted to the hand-brakes and steam-brake.

What was the effect of his attempting to create a vacuum?—To pull all the brakes off. What bit there was on would be pulled off if there was any.

But then his evidence is, there was no brake on?—Then it would have the effect of still keeping the brake off.

When he exhausted the vacuum again, it should have gone on if it had been in working order?—If he had created the vacuum, and then released it again, the brake should have gone on.

It did not go on?—You say there were two carriages with brakes on, therefore it did go on.

It did not go on as it should have done?—It does not appear to have done so.

Do you mean to tell the jury, on your oath, that that man committed an indiscretion when he attempted to create vacuum?—Yes, that is my opinion.

And yet he did no harm?—Yes, he did, because he was running all the while nearer to the point of collision when he was blowing up his vacuum and keeping the brake off all that length of time; whereas, if he had stuck to his hand-brakes and to the steam-brake, probably he would have pulled up before he got into the station. The other day we made an experiment.

The other day is not a fair test. You should have greased the lines the other day?—I shall mention it. We tried an experiment the other day, with Colonel Rich, with the hand-brakes only. Of course it was a better rail I admit, but we pulled up between Upperby Bridge junction and Upperby junction by the application of two hand-brakes in the guard's van and the steam-brake on the engine, which applies to the tender as well, with a similar train and a similar class of engine.

Do you say it was running as fast the other day?—We did not run quite as fast, for this reason: there were some relaying operations going on just by Wood Bank, and we were obliged to slacken for those. I think we got up to a speed of about 45 miles an hour. I have no doubt Rumney was running 60.

He says he was running between 50 and 60 from Shap Summit?—He would be running about 60 miles an hour according to the times from Southwaite.

Was not there a man who gave evidence either here or before Colonel Rich that one of your men in the steam-sheds said, when he saw the train passing, he saw fire flying?—I think one of the signalmen says he saw fire flying from the tender wheels; It was a signalman in No. 12, I think.

The Coroner.—It was the evidence of Anthony Hudson who gave evidence before me. He said, "The rear brake-van was skidding when the train passed my cabin, and sparks were flying from the rails. This was the only sign of any brakes being on that I observed."—It was the man in No. 12 box—Hall.

The Coroner.—"The train passed my cabin at 3.28 a.m. It appeared to be running about the usual speed to the best of my judgment, which is about 30 miles an hour. I noticed the tender-brake and the rear guard's brake were hard on." That is the evidence of John Hall.

Mr. Errington.—"The wheels were skidding, and the sparks were flying from the rear-van brake."

Rumney.—There is one thing I wish to say. When I was trying to create vacuum I pulled the pin out and pulled the lever right back, so as to put the steam-brake on the tender at the same time as I was creating vacuum; so I did not take the brake off the engine at all.

The Jury.—Just repeat that.

Rumney.—When I tried to create vacuum I pulled the handle right back, so as it would put the steam-brake on at the same time as creating vacuum; so I did not take the brake off the engine at all.

Mr. Errington.—Let Mr. Whale answer that question.

The Witness.—That would be so if he says so.

Would that create a vacuum as he says?—If he did what he has just now stated—pulled it right over—that would create a vacuum and put on the steam-brake.

Was that a proper thing to do?—Well, no; I consider that he ought not to have meddled.

I thought you said he ought not to have put on the steam-brake?—I did not say anything of the kind. I said he ought not to have attempted to create the vacuum. He ought to have kept his steam-brake on.

Colonel Rich.—Will you let me ask one question now, because I think it will clear the point up. Would not that, that he says he did, have been the same as working simple vacuum?—Yes.

Instead of automatic?—That is it.

What he says he did now, would have had the effect of working simple vacuum and of taking whatever brake was on the carriages off them all?—Yes.

You say some man spoke to these two carriages rubbing. It would have taken the brake off these carriages if there was any rubbing at all, and I believe that is about what led to the accident—that they were putting them on and off.

Rumney.—I only attempted once; I attempted it passing Upperby Bridge box.

Colonel Rich.—This is the first time that this has come out in any evidence, and it would have this effect, it would be taking the brake off every carriage so that the guards could not put it on. That would be the effect of what he said he did. It would have kept the brake on the engine, but it would have taken the brake off every carriage in the train.

Mr. Errington.—That is if the brake was on.

Colonel Rich.—If the brake was on, the effect of it would be, working simple vacuum, whereas that train was fitted to work automatic vacuum.

The Jury.—Potts was asked the question as to how it was the brake was on these two carriages.

The Coroner.—I will read what he says: "William Potts on being duly sworn saith as follows:—'I am a carriage examiner in the employment of the Caledonian Railway Company; I have been employed as carriage examiner for about 34 years. It is my duty to examine carriages going north from Carlisle. I arrived at the place where the collision occurred about 1½ minutes afterwards. I examined the carriages and found two hand-brakes on, being the two brake-vans. I did not examine the tender-brake nor the steam-brake on the engine. The vacuum-brake on two of the carriages, Nos. 30 and 143, was rubbing and the tyres were warm. I did not notice the engine-brake. The levers of the vacuum-brake were all standing to the A side. This means that the train was working with the automatic brake. Nos. 30 and 143 carriages were the seventh and eighth from the engine.'"

Mr. Errington.—We understand what the man did should have taken the brakes off the carriages, but it did not, it kept the brakes on.

Colonel Rich.—My own belief is this, that it was first on and then off. He got confused. He had no vacuum, and therefore he could not create a proper brake when he came within reach of Carlisle. He tells you he reversed the thing. The very vacuum that he was creating would take whatever brake was on the carriages off completely.

Mr. Errington.—That is not consistent with the guard's evidence.

Colonel Rich.—There might have been only a small amount of brake power on, from it having leaked off down the incline. One man says 10 inches of vacuum in the reservoir. That reservoir vacuum shows what pressure there would be on the brake blocks.

Mr. Errington.—This is treating the evidence of the guard as incorrect.

Colonel Rich.—I am taking the evidence of the guard as fact.

Mr. Errington.—The evidence of the guard is that when the brake was first applied it would not go on.

Colonel Rich.—They had such small power in their reservoirs, only 10 or 15, some say 13, 17 at first, but at all events they had such small power that they could not feel the brakes take. It all chimes one in with the other perfectly. This small power, which was not stopping the train either as the driver wanted or as the guards wanted, was all taken off by his doing what he has now told us he did, and that was my suspicion, very odd to say, from the first. This is the first time any of us have got this evidence.

Rumney.—I told you at first, sir, I tried to create vacuum.

The Witness.—Yes, but you did not say about pulling it over and taking the pin out.

Mr. Errington.—He told you he had on the steam-brake.

The Coroner.—Do you wish to put any questions, Mr. Saul?

Mr. Saul.—I am obliged to put one question in consequence of the cross-examination, and that is this: In your judgment ought not Rumney to have left the vacuum-brake on, and turned on the steam-brakes and hand-brakes?—Yes.

Mr. Errington.—And if he had pursued that course at the time when he says he turned on the ejector, and put on the steam-brake—if he had done that at once, in your opinion would he have been able to stop the train before the accident?—I think so. It is my opinion he could have stopped the train even at the speed he said he was going by the application of the hand-brakes and steam-brake alone.

And therefore what he did (there is no intention to impute anything wrong to him) was in fact an error of judgment?—Yes, I think he has committed an error of judgment, but I do not think he is in any way culpable.

He meant to do his best?—He meant to do his best. He was not careless; he was not asleep; he was not unfit for duty. I believe the man was thoroughly capable and right and straight, but he appears to have committed an error of judgment in this particular case.

Which we are sorry to say has been brought out to-day?—Yes.

Mr. Errington.—That is assuming the brakes did not go on?—I am taking his own statement; I am forming my opinion from the knowledge and practical experience of 30 years in connexion with the working of trains on a line of railway.

Mr. Saul.—And taking his statement as it has been elicited to-day?—Yes.

The Coroner.—Now I will hear any evidence that is admissible if anyone cares to tender it.

Mr. Saul.—We have no further evidence to give unless there is anything of the jury require.

Summing up.

The Coroner.—Gentlemen of the jury, you have now heard all the evidence which appears to be available, and it becomes my duty to ask you to

consider your verdict. So far as regards your finding in reference to the four persons who unfortunately lost their lives on the morning of the 4th March, it is quite clear that they were accidentally killed, and you will experience no difficulty in framing your verdict accordingly. But when you come to deal with the cause of such accident and to form a conclusion upon it you have to solve a problem which is certainly attended with considerable difficulty. Practically you have to decide whether the vacuum-brake with which the train in question was undoubtedly fitted, failed to act at the critical moment, and, if so, why. And you have also to take into consideration the further question, whether, assuming for the moment that the vacuum-brake did so fail, the driver might still by employing such other means of stopping the train as he was provided with have avoided the disaster. If your conclusion be that the driver relied upon the vacuum-brake (which, as he himself has expressed it, could not have acted better than it had done already on the same journey), that for some reason which you are able or unable to fix had unexpectedly failed, that he then did all that man could do to avert a calamity, but without success, then in fairness to him your verdict should fully exonerate him from all blame. But on the other hand, if your finding should be that the vacuum-brake did fail, but that by ordinary prudence with the other brakes he possessed he could still have stopped the train before the collision, then it is obvious he would be placed in a position of grave and serious responsibility and might be liable to stand his trial on a charge of manslaughter for having caused the death of these four persons. Now, gentlemen, it is not my intention to say much about the vacuum-brake. You have heard so much about it that certainly I can say nothing new, and I am not going to weary you by repeating what has already been said by others much better able to speak on it than I can profess to be. But with regard to what happened prior to the train reaching Bletchley I do not think you ought to attach too much importance to it. You will remember when the van, the brake on which had then caused trouble, not by failing to go on, but by failing to come off, was taken off the train at Bletchley, and from Rugby, at all events, where the working of the automatic vacuum was resumed, and the train, so to speak, started *de novo* until it reached Carlisle, the automatic brake acted perfectly. This is testified to by the driver Rumney himself, so far as regards the journey from Crewe, and is established also by the evidence of the conductor and guard. It thus appears that within about 40 minutes prior to the collision the automatic brake was acting, though it is true that coming up the bank at Shap was not a place at which a very fair test could be applied by reason of the steepness of the gradient. Various theories are put forward to account for the failure of the brake (if it did fail) when applied at Wood Bank, but the difficulty seems to be that the evidence of the witnesses as to what did actually occur is irreconcilable with any of the theories so suggested; and as against the notion that the brake was in some way or other out of order, it is only right that I should remind you that you ought not to lose sight of the careful and minute examination which was made by Mr. Whale, with the result, as he has told you, that everything was found in perfect order. This again is subject to the remark that it was only a portion of the train Mr. Whale was able to examine, and his examination was of necessity made many hours after the collision. The evidence has travelled over a somewhat wider field, but you will of course regard with the closest scrutiny the account given of the matter by the driver of the express. Obviously any statement by him demands the strictest attention. You will bear in mind that he is no novice in engine driving; that he has been in the service of the London and North-Western Railway Company for the long period of 30 years, and that during the last 19 years, at all events, he has been a driver of express trains; not only so, but it is admitted that he is a steady and reliable man; and it is I

believe a fact that throughout his long experience as a driver he has never had a single accident. What is his account? He tells you that at Wood Bank he tested the brake by opening the release valve on the splasher of the engine, and that his gauge went down to zero, but that the brake did not seem to act. He also adds that before testing it he saw that his gauge registered 22 inches. He went on to say that he again blew up to 25 inches, and then applied the automatic-brake and his steam-brake to the engine; but that though his gauge again went back to zero, he did not feel any check on the train. He then reversed his engine, and told the fireman to put on his screw-brake and open the sand-valves, both of which he says were done. He also whistled for the guards to put on their brakes. It will be for you to say whether you think he thus did all in his power to prevent a collision, and whether it was brought about by a condition of things entirely beyond his control. But the driver's evidence does not stand alone, and it is important in this regard that you should pay particular attention to the evidence of William Potts, the carriage examiner, of John Downie, the conductor, and of Peter Armstrong, the guard. Potts says that he arrived at the scene of the collision a minute and a half after it took place, that he then examined the carriages and found the hand-brake on in the two vans, that the vacuum-brake on two of the carriages (Nos. 30 and 143) was rubbing, and that the tyres were warm. He also said, in reply to a direct question on the point, that the tyres were too warm to hold one's hand on for any time, and that the brakes must have been on for some miles. Gentlemen, I do not know anything that I can usefully say further, but if there is any part of the evidence which you would like to

hear read, I shall be glad to refer to it. I trust you may be able to arrive at a unanimous verdict, and will only add that if such verdict be accompanied by suggestions, which if given effect to by the Railway Company will reduce as far as human skill and foresight can reduce the possibility of such accidents, you will confer a benefit on the whole travelling public, and the time you have spent on this inquiry will not have been spent in vain.

[The Jury retired to consider their verdict at 12.40 p.m. and returned at 1.18 p.m.]

The Coroner.—Gentlemen, have you agreed upon your verdict.

The Foreman.—It is a unanimous verdict. It is signed by the whole 18 jurors whom you thought it necessary to empanel.

The Coroner.—Then, gentlemen, I will read it. "We find that Jeannie Muirhead Lowson, William Lowles, Walter Ford, and Mary Huxter were "accidentally killed, owing to the train in which "they were travelling overshooting the platform and "coming into collision with an engine belonging to "the Caledonian Railway Company, and that such "collision was entirely due to the failure of the "brake with which the train was fitted. We acquit "the driver Rumney of all blame, and are of opinion "that he used all available means at his hand to stop "the train. We are further of opinion that the "London and North-Western Railway Company are "incurring a very grave responsibility in using "a brake of such an uncertain and unreliable "character." Then, gentlemen, I take this as the verdict of you all.

The Foreman.—That is our unanimous verdict.

London and North-Western Railway, Locomotive Department.

NOTICE TO ENGINEMEN.

Speed of Trains on approaching Terminal Stations.

Complaints have been made that enginemen are not carrying out the instructions contained in the last two paragraphs of Rule 293, which are as follows:—

"Engine-drivers must satisfy themselves that the continuous-brake is in proper working order before starting; at each station where the engine is changed; and again at each station where any vehicle is attached or detached. It must also be tested before passing the distant-signal of any terminus or other principal station at which the train has to stop, and the speed of the train must be reduced by it, and engine-drivers must always enter these stations at such a speed as to enable them to stop the train at the proper place by the application of the ordinary hand-brakes, and guards must watch the speed of trains and assist the engine-drivers by the use of their hand-brakes.

"Unless the continuous-brake is working properly when thus tried, the engine-driver must whistle for the guard's hand-brake, and inform the guard as early as practicable that the continuous-brake is out of order, and the hand-brake must be relied upon for working the train. Special care must then be taken in approaching stations at which the train has to stop."

Enginemen are hereby instructed to strictly carry out these instructions in future. Nothing in this order prevents enginemen testing the vacuum-brake when approaching stations at the usual point.

The guards have been instructed to assist in stopping their trains approaching terminal stations

by the use of the ordinary hand-brakes, and enginemen must report all cases where the guards neglect this duty.

F. W. WEBB.

Crewe, 2nd May 1889.

London and North-Western Railway,
General Manager's Office,
Euston Station, London,
12th April 1889.

INSTRUCTIONS TO ENGINEMEN, GUARDS, AND OTHERS CONCERNED.

Citadel Station, Carlisle, to be treated as a Terminal Station.

Engine-drivers and guards are instructed that the last paragraph of Rule 293, as to entering terminal stations, will apply to all trains approaching the Citadel station at Carlisle.

Guards of trains running into Carlisle must be careful to carry out the instruction in circular No. 2060, which states that—

"Guards must use their hand-brakes to stop trains on approaching terminal and principal junction stations, and must not rely on the drivers pulling up trains by means of the vacuum brake."

Engine-drivers are reminded that, in accordance with the existing regulations with reference to Carlisle station, they must when approaching, passing through, or leaving the station have their engines under sufficient control to be able to stop short of any obstruction that may be upon the joint line, whether the signals indicate danger or not.

G. FINDLAY.

London and North-Western Railway,
Carriage Department,
Wolverton Station,
11th March 1890.

COLLISION at CARLISLE, 4th March 1890.

DEAR SIR,

As promised I beg to hand you here with list of the damage done to the carriages in this accident.

I am, dear Sir,

Yours faithfully,

Colonel Rich, R.E.

C. A. PARK.

PARTICULARS OF DAMAGE to ENGINE 515, shed 15, at
CARLISLE, 4th March 1890.

Buffer-plank and front coupling smashed; low pressure cylinder end knocked in; both side framings broken and bent; smoke-box front knocked in; hand-rail on left side of boiler broken; tender back knocked in.

COLLISION at CARLISLE, 4th March 1890.

303 West Coast Joint Stock third, damaged beyond repairs.

114 West Coast Joint Stock sleeping composite, damaged beyond repairs.

147 West Coast Joint Stock composite, end driven in, head-stocks broken, ironwork damaged.

111 West Coast Joint Stock sleeping composite, end driven in, head-stocks broken, buffer-rods and draw-bar bent, door and quarter-lights broken, and brake work damaged.

162 West Coast Joint Stock brake-van, buffer-rods bent.

66 West Coast Joint Stock third brake, "O-gee" slightly broken.

267 West Coast Joint Stock sleeping saloon, one end driven in, buffer-rods bent, lavatory damaged.
30 Caledonian Railway composite, buffer-rods bent, end panels and mouldings, end body bar and floor-boards damaged.

C. A. Park.

Carriage Department,

Wolverhampton,

11th March 1890.

Citadel Station Committee,
Secretary's Office, Carlisle,

11th March 1890.

SIR,

As arranged, I beg to append a note of the damage to the permanent way on the occasion of the accident here on the 4th instant.

I am, Sir,

Your obedient servant,

Colonel Rich,

Board of Trade,

London.

JOHN THOMSON,

Secretary.

4 rails bent; 105 chairs broken; 1 crossing broken;
6 sleepers broken; points split and connections broken.

ANNEXED DETAILS OF DAMAGE to TENDER of
CALEDONIAN ENGINE, No. 62.

End buffer-plate and buffers destroyed; end foot-plate destroyed; drawhook broken; back end of tank completely knocked in; all Westinghouse pipes knocked off; both brake studs (trailing end) broken off; both inside frames bent, and left side broken; outside angle frames bent, and left broken; intermediate buffer-plate bent, and centre buffer-casting destroyed; tender folding-plate broken off.

Conclusion.

This collision, which occurred about 3.30 a.m., was caused by the mismanagement of the engine-driver and consequent want of brake power to stop the train, which ran down the incline from Shap Summit at a speed of about 60 miles an hour, and approached Carlisle station at a high speed.

If the engine-driver had obeyed his instructions, whistled for the guards' brakes, and kept the steam-brake on his engine and tender from the time that he said that he tested his automatic vacuum-brake at Wood Bank, and thought it did not act, I am of opinion that he would have stopped his train before he reached Carlisle station. The train was then more than two miles from the point of collision. I think that it must have been much nearer Carlisle when he tested and thought that the automatic vacuum-brake would not act.

It is impossible to make the driver's evidence agree with what the train would or should have done under the circumstances stated, and more particularly so, from what occurred when I ran an experimental train from Carlisle to Penrith and back, which was made up of similar vehicles, with similar brakes, and in the same manner.

I found that although the rails during my experiments were particularly dry, that by keeping steam on the engine I could run for many miles when the small ejector was shut off, and that, although the train vacuum pipe gradually leaked off to zero, the reservoirs only leaked off three to four inches of vacuum in about 10 minutes, and kept the brakes on, but not tight on, and that the brake by this slow leaking on acted more on some coaches than on others. Although the ejector would blow up the vacuum to 22 inches, 19 inches was the highest vacuum I maintained, and 17 inches about the standard vacuum. The van wheels alone heated after running a considerable distance, although the friction as the brakes leaked on, must have been more severe during my trials, when the rail was perfectly dry, than on the morning of the accident, when it was dropping sleet and rain, and was considerably warmer at the north than at the south side of Shap Summit.

When I made a very quick stop at the north side of Penrith station, I observed that the driver shut off his small ejector at once, and on asking him why? he said they were

directed to shut it off in the large stations to prevent noise ; but on my remarking that the train was not at a station, I gathered from his reply that it was his practice to do this. It appears to be the rule to do so. This rule should be altered and the practice discontinued.

Taking this practice into consideration, I think the accident was caused in the following manner:—

The engine-driver shut off his small ejector on arriving at Shap Summit, and forgot to open it before proceeding on his journey.

If so, the brakes would gradually and partially leak on, but they would not stop the train on a steep falling gradient, while the engine was steaming hard, and particularly on a greasy rail, such as existed on the night in question. When the driver tested his vacuum at Wood Bank, there would be little or none in the pipe, he would feel no further check to his train than was already applied by the leaking on, and the guards would find the same when they tried to apply the vacuum-brake by opening the valves in their vans. The driver then became anxious, and instead of carrying out what his rules direct him to do, and whistling for the guards' brakes, he took out the pin and alters his lever, so as to work simple vacuum instead of automatic. By doing this, he took off whatever brake power he had left, except the steam-brake on his engine and the screw brakes on the vans, which may not then have been applied by the guards, and he also must have taken the steam-brake off his engine during the time when he first tried to obtain automatic brake power by blowing up his vacuum with the large ejector, and before he took out the pin. He appears not to have whistled for the screw-brakes until he got close to the station, but the guards put them on when they were at Upperby Bridge junction. After the train stopped, the wheels of two coaches were found to be heated. They must have been so heated, while running with the automatic brake on between Shap Summit and Wood Bank, as there was not time or brake power put on between Wood Bank and Carlisle station to heat them.

The same effect would have been produced by the vacuum-pipe between the engine and tender becoming stopped with a plug of ice after the train left Shap Summit, but in this case the automatic brake would have leaked on, and could not have been taken off by the driver, so long as the ice remained, and I think that as the driver shut off steam at Wood Bank, the train would have been stopped with this brake power, the guards' screw-brakes, and the steam-brake on the engine and tender before it reached Carlisle.

When the automatic vacuum-brake machinery was examined after the accident it was found to have been in good order. About half a pint of water was found in the belly of the pipe between the engine and tender, but this quantity of water, if frozen, would not be sufficient to plug the pipe and stop the air-way. From the evidence of the signalman it appears doubtful whether the engine-wheels were braked when the train passed the station and the signal-cabins at the south side of the station. This would be the case if the engine-driver had only pulled his lever into the notch in the slide, instead of pulling it right over, as he said he did. If he pulled it only to the notch, he would take the brake off his engine and every vehicle in the train, except those to which the screw-brakes were applied, which the witnesses who saw the train pass, said was the case. I think that there was nothing the matter with the brake, but that the driver, by shutting his small ejector at Shap Summit, lost a great part of his vacuum, and that he did not notice this before he reached Wood Bank. He then got thoroughly confused, and omitted to do what he should have done if he had acted as his rules direct, and did what he ought not to have done, by altering his engine to work simple in place of automatic vacuum. I think that great allowance should be made for the mistakes that he made, as it must be a most confusing thing to have both the simple vacuum and the automatic vacuum-brake to deal with. The simple is put on by pulling a lever towards you, and the automatic vacuum-brake is put on by pushing the *same lever* from you. I recommend the London and North-Western Railway Company to put a stop to this confusion by doing away, as the Company have some time since determined, with the simple vacuum as fast as possible, and I would further recommend the Company, as they have now adopted the automatic-brake, to carry this out in the best manner, and to work it with a proper amount of vacuum. The Company now work it at an average vacuum of about 17 inches. This is not enough. It should be worked up to 25 inches, and not allowed to go below 20 inches when running.

This should be done by means of an air-pump or an ejector. If done by an ejector the exhaust-pipe should be taken through the boiler, which will prevent the steam condensing as it does when the pipe is outside, and drivers should not shut the

small ejector while their engine is attached to a train. I understand that the London and North-Western Railway Company are now fitting their engines with air pumps. The drip-trap with a valve, should be placed at the bottom of a vertical down pipe, and close enough to the ash pan, to prevent the valve freezing.

The driver of the Caledonian engine did what he could. He had fortunately time to reverse his engine and get steam on, to run in the same direction as the London and North-Western train, before the collision occurred. The conductor and guard with the London and North-Western train appear to have done their duty; and as to the state of their gauges, these would be affected by the driver's action in working his big ejector. When they opened their release valves to put on the automatic vacuum-brake it was impossible for the brake to act, as the driver was pulling it off with his large ejector. I place no reliance on the driver's evidence as to the state of his gauge while descending the Shap. I think that he probably did not observe it, till he wanted to use the brake when the train arrived near Carlisle.

I recommend that the crossing to the sidings at the north end of Carlisle station should be reversed, so that engines may run directly across the main line when going to the sidings.

The Assistant Secretary,
Railway Department, Board of Trade.

I have, &c.,
F. H. RICH,
Colonel, R.E.

Continuous Brakes.

Extract from the Returns made by Railway Companies to the Board of Trade under the Railway Returns (Continuous Brakes) Act, 1878, of the total number of cases in which the Automatic vacuum, Vacuum, and Westinghouse-automatic brakes have respectively failed to act when required to be brought into action, or have caused delay in the working of trains on railways during the years 1888 and 1889, together with the mileage respectively run by passenger trains fitted with these brakes.

The failures are classified under the following heads:—

- Class 1. Failure or partial failure to act when required in case of an accident to a train, or a collision between trains being imminent.
- „ 2. Failure or partial failure to act under ordinary circumstances to stop a train when required.
- „ 3. Delay in the working of trains in consequence of defects in, or improper action of, the brakes, distinguishing whether they arose from neglect or inexperience of servants, or failure of machinery or material.

Description of Brake.	Year ended 31st December 1888.				Year ended 31st December 1889.			
	Class 1.	Class 2.	Class 3.	Mileage of passenger trains.*	Class 1.	Class 2.	Class 3.	Mileage of passenger trains.*
Automatic vacuum -	—	14	523	Millions. 54	—	25	605	Millions. 72
Vacuum - -	—	72	103	35	—	49	57	26
Westinghouse automatic	—	12	656	42	—	28	582	44
	—	98	1,282	131*	—	102	1,244	142*

* These are only given in round numbers.

RETURN

(In pursuance of the RAILWAY RETURNS (CONTINUOUS BRAKES) ACT, 1878)

BY

THE RAILWAY COMPANIES OF THE UNITED KINGDOM,

For the Six Months ending the 31st December 1889.

Presented to both Houses of Parliament by Command of Her Majesty.



LONDON:

PRINTED FOR HER MAJESTY'S STATIONERY OFFICE,

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1890.

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Board of Trade,
March 1890.

HENRY G. CALCRAFT.

TABLE compiled from the HALF-YEARLY RETURNS of CONTINUOUS BRAKES from June 30th, 1882, to 31st Dec. 1889 (omitting all the December half-years, except the last, and the Brakes not in use during the past half-year), showing the PROGRESS made in the USE of CONTINUOUS BRAKES, and the Total Amount of Stock NOT FITTED with CONTINUOUS BRAKES.

Amount of Stock fitted as per Return for Six Months ended																			
NAME OF BRAKE.	30 June 1882.		30 June 1883.		30 June 1884.		30 June 1885.		30 June 1886.		30 June 1887.		30th June 1888.		30th June 1889.		31 Dec. 1889.		
	Engines.	Carriages, &c.	Engines.	Carriages, &c.	Engines.	Carriages, &c.	Engines.	Carriages, &c.	Engines.	Carriages, &c.	Engines.	Carriages, &c.	Engines.	Carriages, &c.	Engines.	Carriages, &c.			
<i>Brakes which are returned by the Companies as complying with conditions in Board of Trade circular.</i>	Automatic vacuum	773	4,465	1,127	6,379	1,480	8,381	1,783	9,049	2,185	11,714	2,581	13,888	3,683	17,750	5,259	23,539	24,979	Automatic vacuum.
	Steel McInnes	3	43	3	89	3	38	3	38	—	37	—	35	—	34	—	34	34	Steel McInnes.
	Westinghouse automatic	975	8,546	1,173	10,686	1,345	12,645	1,523	13,620	1,706	14,519	1,804	14,652	1,915	14,888	2,041	15,553	16,980	Westinghouse automatic.
	Total	1,753	13,190	2,303	17,662	2,828	21,646	3,306	24,190	3,980	26,853	4,386	28,578	5,504	32,630	7,301	38,531	40,963	Total.
	Per-centage of total stock (complying)	or 33 per cent.	or 29 per cent.	or 40 per cent.	or 38 per cent.	or 44 per cent.	or 44 per cent.	or 49 per cent.	or 47 per cent.	or 52 per cent.	or 52 per cent.	or 52 per cent.	or 54 per cent.	or 61 per cent.	or 62 per cent.	or 75 per cent.	or 72 per cent.	or 76 per cent.	Per-centage of total stock (complying).
<i>Brakes which appear to comply with only some of the conditions in the circular.</i>	Chain brake (including the brake in use on North London Railway)	—	6,603	—	6,793	—	6,616	55	4,627	688	2,677	764	2,076	770	1,689	778	1,523	1,515	Chain brake (including the brake in use on North London Railway).
	Fay's, Newall's, and Fay and Newall's.	—	2,248	9	2,253	—	2,187	—	2,164	—	1,609	—	1,001	—	465	—	445	418	Fay's, Newall's, and Fay and Newall's.
	Smith's vacuum.	973	5,488	1,055	6,107	1,138	6,653	1,231	7,559	1,250	7,773	1,616	8,010	1,529	7,641	841	4,304	4,135	Smith's vacuum.
	W. Parker Smith's automatic.	—	4	—	3	—	3	—	3	—	3	—	3	—	3	—	3	3	W. Parker Smith's automatic.
	Vacuum.	3	25	75	82	289	372	537	2,532	637	4,548	970	5,650	560	4,925	205	3,896	3,418	Vacuum.
Total and per-centage	Westinghouse pressure	36	242	36	278	42	296	48	350	54	350	54	350	54	350	54	350	350	Westinghouse pressure.
	Total and per-centage	1,015 or 18 per cent.	14,689 or 32 per cent.	1,175 or 20 per cent.	15,693 or 31 per cent.	1,469 or 23 per cent.	15,550 or 32 per cent.	1,816 or 26 per cent.	16,663 or 32 per cent.	2,651 or 35 per cent.	16,885 or 31 per cent.	3,404 or 40 per cent.	17,090 or 32 per cent.	2,913 or 32 per cent.	15,073 or 29 per cent.	1,878 or 20 per cent.	10,521 or 20 per cent.	9,889 or 18 per cent.	Total and per-centage.
	Total stock (complying and partly complying) fitted with continuous brakes and per-centage	2,773 or 51 per cent.	27,819 or 61 per cent.	3,478 or 60 per cent.	32,685 or 69 per cent.	4,297 or 67 per cent.	37,196 or 76 per cent.	5,212 or 75 per cent.	40,852 or 79 per cent.	6,031 or 89 per cent.	43,238 or 83 per cent.	7,790 or 92 per cent.	45,668 or 85 per cent.	8,417 or 93 per cent.	47,763 or 91 per cent.	9,179 or 95 per cent.	49,452 or 92 per cent.	50,882 or 91 per cent.	Total stock (complying and partly complying) fitted with continuous brakes and per-centage.
	Total amount of stock not fitted with continuous brakes and per-centage	2,762 or 49 per cent.	17,727 or 39 per cent.	2,275 or 40 per cent.	14,320 or 31 per cent.	2,081 or 33 per cent.	11,663 or 24 per cent.	1,765 or 25 per cent.	10,707 or 21 per cent.	849 or 11 per cent.	8,563 or 17 per cent.	682 or 8 per cent.	7,140 or 14 per cent.	567 or 6 per cent.	4,853 or 9 per cent.	545 or 5 per cent.	4,312 or 8 per cent.	433 or 4 per cent.	Total amount of stock not fitted with continuous brakes and per-centage.

NOTE.—The above return is prepared with the object of showing the progress made for several years. The figures which are given in gross include engines fitted with apparatus for working brakes and vehicles fitted with pipes or connections. For further division, see pp. 4, 6.

ABSTRACT of the RETURNS showing the description of CONTINUOUS BRAKES in use on 31st December 1889 on the Railways in the UNITED KINGDOM, and the AMOUNT of STOCK and the MILEAGE run by Trains fitted with each description of Brake, &c., &c.

Name of Brake.	Name of Railway Company.	Stock fitted.				Number of Miles run by Trains fitted.	Proportion per cent.	
		Engines and Tenders.		Carriages, &c.			Of Vehicles fitted with Brakes.	Of Mileage run by Trains fitted.
		Fitted with Brakes.	Fitted with Apparatus for working the Brakes.	Fitted with Brakes.	Fitted with Pipes, &c.			
1. The following Brakes are returned by the Companies as complying with the conditions specified in the Circular of the Board of Trade, dated 30th August 1877. (For copy of Circular see page 126.)								
Automatic Vacuum - (Non-Leak off) - (Leak off) - 								

Name of Brake.	Name of Railway Company.	Stock fitted.				Number of Miles run by Trains fitted.	Proportion per cent.	
		Engines and Tenders.		Carriages, &c.			Of Vehicles fitted with Brakes.	Of Mileage run by Trains fitted.
		Fitted with Brakes.	Fitted with Apparatus for working the Brakes.	Fitted with Brakes.	Fitted with Pipes, &c.			
2. The following Brakes appear to comply with only some of the conditions specified in the Circular above mentioned.								
Clark's Chain	Isle of Wight Central	—	—	4	—	31,704	15	34
	North London	—	—	2	—	—	—	See below
	Severn and Wye and Severn Bridge	—	12	6	6	37,410	50	100
Clark and Webb's	Bishop's Castle	—	—	4	—	—	67	—
	London and North-western	—	677	790	4	912,198	10	9
	London, Tilbury, and Southend	—	—	10	8	316	4	—
	North London	—	87	629	1	911,048	99	100
	Wrexham, Mold, and Con-nah's Quay.	—	—	35	—	6,050	100	26
	Ayrshire and Wigtownshire	—	—	10	—	—	31	—
Wilkin and Clark's	Somerset and Dorset	—	—	6	—	—	4	—
Fay's	Brecon and Merthyr	—	—	38	—	83,735	88	100
	Great Western	—	—	156	—	337,793	4	5
	Lancashire and Yorkshire	—	—	6	—	—	—	—
	London and North-western	—	—	44	—	58,122	1	1
	Pontypridd, Caerphilly, and Newport.	—	—	4	—	—	50	—
Newall's	Furness	—	—	16	—	33,300	5	9
	Lancashire and Yorkshire	—	—	16	—	—	—	—
	Highland	—	—	138	—	302,457	18	54
Walter Parker Smith's Automatic.	Liskeard and Caradon	—	—	3	—	4,695	50	100
Smith's Vacuum	Cheshire Lines	—	—	34	52	928	8	—
	Great Northern	42	1	126	—	8,439	4	—
	Manchester, Sheffield, and Lincolnshire	9	5	106	203	20,060	9	1
	Manchester, South Junction, and Altrincham.	114	1	119	1	108,536½	96	100
	Metropolitan	66	—	328	14	1,107,196	96	100
	Midland	—	—	—	8	—	—	—
	North-eastern	25	—	—	—	—	—	—
	South-eastern	101	8	940	690	2,695,848	44	90
	Belfast and Northern Counties	6	—	10	5	26,663	4	6
	Dublin, Wicklow, & Wexford	36	9	154	61	411,426	65	93
	Great Northern (Ireland)	90	—	378	93	994,148	81	97
	Great Southern and Western	175	—	440	79	967,375	86	99
	Midland Great Western	34	—	163	113	622,087	48	93
	Sligo, Leitrim, and Northern Counties.	5	—	18	—	15,132	95	30
	Waterford, Dungarvon, and Lismore.	1	—	—	—	—	—	—
Vacuum	Cambrian	—	10	59	28	127,030	25	28
	London and North-western	—	53	1,825	1,189	5,778,274	26	58
	London and North-western and Caledonian (West Coast Joint Stock).	—	—	21	—	—	—	—
	North Staffordshire	28	38	176	120	501,171	44	58
Westinghouse Air Pressure.	Metropolitan District	54	—	350	—	773,885	100	100
	Totals	795	901	7,164	2,675	16,877,026	13	20
Total Amount of Stock returned as FITTED with Continuous Brakes to 31st December 1889.		5,191 or 51 per cent.	4,498 or 44 per cent.	43,172 or 80 per cent.	7,660 or 14 per cent.	79,177,254 or 93 per cent.	—	—
Amount of Stock FITTED with Continuous Brakes during the six months ending 31st December 1889.		343 or 3 per cent.	419 or 4 per cent.	1,900 or 4 per cent.	288 or 0.5 per cent.	Miles run by trains not fitted,		
Amount of Stock NOT FITTED with Continuous Brakes.		4,931 including 4,498 engines fitted with apparatus for working the continuous brake, or 49 per cent.		10,422 including 7,660 vehicles fitted with pipes and connections only, or 20 per cent.		5,704,951 or 7 per cent.		

NOTE.—The engines entered above as fitted with apparatus for working the continuous brake, have in most instances steam brakes which are worked in connexion with the continuous brake.

TABLE showing the NUMBER of VEHICLES in use on the RAILWAYS of the UNITED KINGDOM
TOTAL NUMBER in use on the RAILWAYS, and of the MILES run by PASSENGER TRAINS

NAME OF RAILWAY.	A. BRAKES WHICH APPEAR TO COMPLY WITH ONLY SOME OF THE CONDITIONS SPECIFIED IN THE CIRCULAR OF THE BOARD OF TRADE.											
	CLARK'S CHAIN AND CLARK AND WEBB'S.			FAY'S, NEWALL'S, AND FAY AND NEWALL'S.			SMITH'S VACUUM.			VACUUM.		
	Number of Vehicles		Miles run by Trains fitted with Con- tinuous Brakes.	Number of Vehicles		Miles run by Trains fitted with Con- tinuous Brakes.	Number of Vehicles		Miles run by Trains fitted with Con- tinuous Brakes.	Number of Vehicles		Miles run by Trains fitted with Con- tinuous Brakes.
	Fitted with Brakes.	Percent- age so Fitted.		Fitted with Brakes.	Percent- age so Fitted.		Fitted with Brakes.	Percent- age so Fitted.		Fitted with Brakes.	Percent- age so Fitted.	
ENGLAND AND WALES.			Per cent.			Per cent.			Per cent.			Per cent.
Bishop's Castle - -	4	67	—	—	—	—	—	—	—	—	—	—
Bracon and Merthyr - -	—	—	—	38	88	100	—	—	—	—	—	—
Cambrian - - - -	—	—	—	—	—	—	—	—	—	59	30	23
Cheshire Lines - -	—	—	—	—	—	—	34	8	—	—	—	—
Colne Valley and Halstead -	—	—	—	—	—	—	—	—	—	—	—	—
East and West Junction -	—	—	—	—	—	—	—	—	—	—	—	—
Eastern and Midlands - -	—	—	—	—	—	—	—	—	—	—	—	—
Furness - - - -	—	—	—	16	5	9	—	—	—	—	—	—
Great Eastern - - -	—	—	—	—	—	—	—	—	—	—	—	—
Great Northern - - -	—	—	—	—	—	—	126	4	—	—	—	—
Great Western - - -	—	—	—	156	3	4	—	—	—	—	—	—
Hull, Barnsley, and West Riding Junction.	—	—	—	—	—	—	—	—	—	—	—	—
Isle of Wight Central -	4	15	30	—	—	—	—	—	—	—	—	—
Lancashire and Yorkshire -	—	—	—	22	1	—	—	—	—	—	—	—
Liskeard and Caradon - -	—	—	—	—	—	—	—	—	—	—	—	—
London and North-Western -	790	10	9	44	1	1	—	—	—	1,846	26	58
London and South-Western -	—	—	—	—	—	—	—	—	—	—	—	—
London, Brighton, and South Coast.	—	—	—	—	—	—	—	—	—	—	—	—
London, Chatham, and Dover -	—	—	—	—	—	—	—	—	—	—	—	—
Londonderry - - - -	—	—	—	—	—	—	—	—	—	—	—	—
London, Tilbury, and Southend	10	4	—	—	—	—	—	—	—	—	—	—
Manchester, Sheffield, and Lincolnshire.	—	—	—	—	—	—	106	9	1	—	—	—
Manchester, South Junction, and Altrincham.	—	—	—	—	—	—	119	98	100	—	—	—
Mersey - - - -	—	—	—	—	—	—	—	—	—	—	—	—
Metropolitan - - - -	—	—	—	—	—	—	328	96	100	—	—	—
Metropolitan District - -	—	—	—	—	—	—	—	—	—	—	—	—
Midland - - - -	—	—	—	—	—	—	—	—	—	—	—	—
Midland and South-Western Junction.	—	—	—	—	—	—	—	—	—	—	—	—
North-Eastern - - - -	—	—	—	—	—	—	—	—	—	—	—	—
North London - - - -	631	99	100	—	—	—	—	—	—	—	—	—
North Staffordshire - -	—	—	—	—	—	—	—	—	—	176	47	77
Pontypridd, Caerphilly, and Newport.	—	—	—	4	50	100	—	—	—	—	—	—
Rhondda and Swansea Bay -	—	—	—	—	—	—	—	—	—	—	—	—
Rhymney - - - -	—	—	—	—	—	—	—	—	—	—	—	—
Seacombe, Hoylake, & Deeside	—	—	—	—	—	—	—	—	—	—	—	—
Severn & Wye & Severn Bridge.	6	50	100	—	—	—	—	—	—	—	—	—
Somerset and Dorset - -	6	4	—	—	—	—	—	—	—	—	—	—
South-Eastern - - - -	—	—	—	—	—	—	940	44	90	—	—	—
Taff Vale - - - -	—	—	—	—	—	—	—	—	—	—	—	—
West Lancashire - - -	—	—	—	—	—	—	—	—	—	—	—	—
Wrexham, Mold and Connah's Quay	35	100	126	—	—	—	—	—	—	—	—	—
Total - - - -	1,486	3	3	280	1	1	1,653	4	5	2,081	5	9

which are fitted with CONTINUOUS BRAKES, the proportion per cent. of VEHICLES so fitted to the total fitted to their TOTAL MILEAGE during the SIX MONTHS ended 31st December 1889.

B. BRAKES RETURNED BY THE COMPANIES AS COMPLYING WITH THE CONDITIONS SPECIFIED IN THE CIRCULAR OF THE BOARD OF TRADE.						C. ALL CONTINUOUS BRAKES.						NAME OF RAILWAY.
AUTOMATIC VACUUM.			WESTINGHOUSE AUTOMATIC.									
Number of Vehicles		Miles run by Trains fitted with Continuous Brakes.	Number of Vehicles		Miles run by Trains fitted with Continuous Brakes.	Number of Vehicles			Number of Miles Travelled by Trains			
Fitted with Brakes.	Percentage so Fitted.		Fitted with Brakes.	Percentage so Fitted.		Fitted with Brakes.	Not Fitted with Brakes.	Percentage Fitted with Brakes.	Fitted with Brakes.	Not Fitted.	Fitted per Cent.	
		Per cent.			Per cent.							ENGLAND and WALES.
—	—	—	—	—	—	4	2	67	—	12,474	100	Bishop's Castle.
—	—	—	—	—	—	38	5	88	83,735	—	100	Brecon and Merthyr.
—	—	—	—	—	—	59	140	30	127,030	376,814	25	Cambrian.
321	80	100	—	—	—	355	52	88	809,624	—	100	Cheshire Lines.
—	—	—	5	24	38	5	16	24	14,000	23,120	38	Colne Valley and Halstead.
—	—	—	11	61	94	11	7	61	54,324	9,897	94	East and West Junction.
—	—	—	58	35	81	58	109	35	190,053	44,934	81	Eastern and Midlands.
92	28	67	—	—	—	108	215	33	268,358	83,984	76	Furness.
—	—	—	3,277	99	99	3,277	47	99	5,500,199	51,138	99	Great Eastern.
2,135	75	100	—	—	—	2,311	612	79	4,792,976	5,198	100	Great Northern.
4,186	84	94	—	—	—	4,342	631	87	8,742,083	145,890	98	Great Western.
—	—	1	85	61	98	85	81	51	185,487	1,985	99	Hull, Barnsley, and West Riding Junction.
—	—	—	—	—	—	4	23	15	31,704	61,377	34	Isle of Wight Central.
3,226	98	100	—	—	—	3,248	22	99	4,978,770	—	100	Lancashire and Yorkshire.
—	—	—	—	—	—	3	3	50	4,695	249	95	Liskeard and Caradon.
3,297	46	32	—	—	—	5,977	1,219	83	10,010,145	13,002	100	London and North-Western.
2,433	78	100	—	—	—	2,433	681	78	4,678,492	20,446	100	London and South-Western.
—	—	—	2,631	93	100	2,631	192	93	3,758,058	7,046	100	London, Brighton, and South Coast.
12	1	1	566	41	32	578	477	45	624,478	1,242,302	33	London, Chatham, and Dover.
—	—	—	18	100	100	18	—	100	20,028	—	100	Londonderry.
—	—	—	245	91	100	255	14	95	383,005	—	100	London, Tilbury, and Southend.
720	65	99	—	—	—	826	295	74	1,806,607	6,399	100	Manchester, Sheffield, and Lincolnshire.
—	—	—	—	—	—	119	2	98	108,536	—	100	Manchester, South Junction, and Altrincham.
79	96	100	—	—	—	79	3	96	112,898	—	100	Mersey.
—	—	—	—	—	—	328	14	96	1,107,196	—	100	Metropolitan.
—	—	—	—	—	—	*350	Nil.	100	773,885	—	100	Metropolitan District.
3,905	90	95	202	4	—	4,197	278	94	7,724,807	387,707	95	Midland.
9	22	—	—	—	—	9	32	22	—	71,228	—	Midland and South-Western Junction.
—	—	—	2,949	100	100	2,949	10	100	5,546,421	581	100	North-Eastern.
—	—	—	—	—	—	631	5	99	911,048	—	100	North London.
6	2	—	—	—	—	182	189	49	503,027	152,311	77	North Staffordshire.
—	—	—	—	—	—	4	4	50	—	—	—	Pontypridd, Caerphilly, and Newport.
18	72	—	7	28	100	25	—	100	12,245	—	100	Rhondda and Swansea Bay.
—	—	—	42	64	100	42	24	64	94,536	—	100	Rhymney.
24	56	100	—	—	—	24	19	56	85,567	64	100	Seacombe, Hoylake, and Deeside.
—	—	—	—	—	—	6	6	50	37,410	—	100	Severn & Wye & Severn Bridge.
148	96	99	—	—	—	154	—	100	269,230	3,952	99	Somerset and Dorset.
500	23	—	—	—	—	1,440	721	67	2,695,848	286,892	90	South-Eastern.
207	96	99	—	—	—	207	9	96	173,604	1,021	99	Taff Vale.
—	—	—	25	28	82	25	64	28	117,782	5,533	82	West Lancashire.
—	—	—	—	—	—	35	—	100	6,060	16,996	26	Wrexham, Mold, and Connah's Quay.
21,458	48.5	53	10,121	23	23	37,432	6,769	85	67,355,805	3,444,127	95	Total.

* The entire stock of the Metropolitan District Company is fitted with the Westinghouse Non-automatic Brake.

TABLE showing the NUMBER of VEHICLES in use on the RAILWAYS of the UNITED KINGDOM
TOTAL NUMBER in use on the RAILWAYS, and of the MILES run by PASSENGER TRAINS so

NAME OF RAILWAY.	A. BRAKES WHICH APPEAR TO COMPLY WITH ONLY SOME OF THE CONDITIONS SPECIFIED IN THE CIRCULAR OF THE BOARD OF TRADE.											
	CLARK'S CHAIN AND CLARK AND WEBB'S.			FAY'S, NEWALL'S, AND FAY AND NEWALL'S.			SMITH'S VACUUM.			VACUUM.		
	Number of Vehicles		Miles run by Trains fitted with Con- tinuous Brakes.	Number of Vehicles		Miles run by Trains fitted with Con- tinuous Brakes.	Number of Vehicles		Miles run by Trains fitted with Con- tinuous Brakes.	Number of Vehicles		Miles run by Trains fitted with Con- tinuous Brakes.
	Fitted with Brakes.	Percent- age so Fitted.		Fitted with Brakes.	Percent- age so Fitted.		Fitted with Brakes.	Percent- age so Fitted.		Fitted with Brakes.	Percent- age so Fitted.	
SCOTLAND.			Per cent.			Per cent.			Per cent.			Per cent.
Ayrshire and Wigtownshire -	10	31	—	—	—	—	—	—	—	—	—	—
Caledonian -	—	—	—	—	—	—	—	—	—	—	—	—
Glasgow and South-Western -	—	—	—	—	—	—	—	—	—	—	—	—
Great North of Scotland -	—	—	—	—	—	—	—	—	—	—	—	—
Highland - - -	—	—	—	138	18	54	—	—	—	—	—	—
North British - - -	—	—	—	—	—	—	—	—	—	—	—	—
Total - - -	10	—	—	138	2	3	—	—	—	—	—	—
IRELAND.												
Belfast and Northern Counties	—	—	—	—	—	—	10	4	6	—	—	—
Castlederg and Victoria Bridge	—	—	—	—	—	—	—	—	—	—	—	—
Cavan, Leitrim, and Roscommon.	—	—	—	—	—	—	—	—	—	—	—	—
Cork and Muskerry Light -	—	—	—	—	—	—	—	—	—	—	—	—
Dublin, Wicklow, and Wexford	—	—	—	—	—	—	154	65	93	—	—	—
Dundalk, Newry, and Greenore	—	—	—	—	—	—	—	—	—	—	—	—
Great Northern (Ireland) -	—	—	—	—	—	—	378	80	97	—	—	—
Great Southern and Western -	—	—	—	—	—	—	440	83	99	—	—	—
Midland Great Western -	—	—	—	—	—	—	163	48	93	—	—	—
Sligo, Leitrim, and Northern Counties.	—	—	—	—	—	—	18	95	30	—	—	—
Waterford and Limerick -	—	—	—	—	—	—	—	—	—	—	—	—
West Clare - - -	—	—	—	—	—	—	—	—	—	—	—	—
Total - - -	—	—	—	—	—	—	1,163	44	64	—	—	—
UNITED KINGDOM -	1,496	3	2	418	1	1	2,816	5	8	2,081	4	8

which are fitted with CONTINUOUS BRAKES, the proportion per cent. of VEHICLES so fitted to the fitted to their TOTAL MILEAGE during the SIX MONTHS ended 31st December 1889--*continued.*

B. BRAKES RETURNED BY THE COMPANIES AS COMPLYING WITH THE CONDITIONS SPECIFIED IN THE CIRCULAR OF THE BOARD OF TRADE.						C. ALL CONTINUOUS BRAKES.						NAME OF RAILWAY.
AUTOMATIC VACUUM.			WESTINGHOUSE AUTOMATIC.									
Number of Vehicles		Miles run by Trains fitted with Continuous Brakes.	Number of Vehicles		Miles run by Trains fitted with Continuous Brakes.	Number of Vehicles			Number of Miles Travelled by Trains			
Fitted with Brakes.	Percentage so Fitted.		Fitted with Brakes.	Percentage so Fitted.		Fitted with Brakes.	Not Fitted with Brakes.	Percentage Fitted with Brakes.	Fitted with Brakes.	Not Fitted.	Fitted per Cent.	
		Per cent.			Per cent.							
SCOTLAND.												
—	—	—	6	19	50	16	16	50	24,016	24,016	50	Ayrshire and Wigtownshire.
—	—	—	1,296	63	95	1,325	752	64	2,995,872	89,216	97	Caledonian.
418	41	55	371	30	41	789	242	77	1,540,497	69,735	96	Glasgow and South-Western.
—	—	—	197	35	46	197	327	37	290,650	369,097	44	Great North of Scotland.
75	10	46	24	3	—	237	512	31	556,667	—	100	Highland.
—	—	—	1,600	68	87	1,600	691	68	2,931,023	410,726	87	North British.
493	7	12	3,494	52	73	4,164	2,567	62	8,338,725	1,005,877	89	Total.
IRELAND.												
142	61	67	—	—	—	162	82	65	303,225	115,178	73	Belfast and Northern Counties.
—	—	—	7	26	100	7	20	26	9,120	—	100	Castlederg and Victoria Bridge.
123	96	100	—	—	—	123	5	96	53,137	—	100	Cavan, Leitrim, and Roscommon.
16	30	100	—	—	—	16	31	30	34,938	—	100	Cork and Muskerry Light.
—	—	—	—	—	—	154	77	65	411,426	30,198	93	Dublin, Wicklow, and Wexford.
4	16	—	—	—	—	4	21	16	—	35,990	—	Dundalk, Newry, and Greenore.
—	—	—	—	—	—	378	93	80	994,143	28,255	97	Great Northern (Ireland).
6	1	1	—	—	—	446	79	87	989,863	—	100	Great Southern and Western.
41	12	—	—	—	—	204	135	60	622,087	46,465	93	Midland Great Western.
—	—	—	—	—	—	18	1	95	15,132	36,240	30	Sligo, Leitrim, and Northern Counties.
8	6	6	—	—	—	8	130	6	20,727	349,795	6	Waterford and Limerick.
66	100	100	—	—	—	66	—	100	29,421	—	100	West Clare.
406	15	9.5	7	—	—	1,576	1,086	59	3,483,224	1,255,147	74	Total.
22,357	42	46	13,622	25	27.5	43,172	10,422	80	79,177,254	5,704,951	93	UNITED KINGDOM.

No. 1.

RETURN for the Six Months ending on the 31st day of December 1889, of the AMOUNT running on

NAME OF RAILWAY COMPANY.	Name and Description of Brake or Brakes adopted by the Company, and in use on Passenger Trains on Lines worked by them.	(1.) Whether the Brakes are instantaneous in action, and capable of being applied by engine-driver and guards. (2.) Whether self-acting. (3.) Whether capable of being applied to every vehicle of a train. (4.) Whether in regular use in daily working. (5.) Whether the materials employed are of a durable character, easily maintained, and kept in order.	AMOUNT OF STOCK FITTED WITH			
			Number of Engines and Tenders (used for Passenger Trains) in which the Continuous Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of Passenger Carriages.	
					Fitted with Brake Gear complete.	Fitted only with Chain or Pipes and Connections for connecting the Brakes.
ENGLAND AND WALES.						
AYLESBURY AND BUCKINGHAM.	Engines and coaches are supplied by G.W.R. Co.	—	—	—	—	—
BISHOP'S CASTLE	Webb's chain -	(1.) Yes, and applied by guard only. (2.) Yes. (3.) Only to passenger vehicles and guard's van. (4.) Yes. (5.) Yes.	—	—	4	—
BRECON AND MERTHYR TYDFIL JUNCTION.	Fay's - -	(1.) By guard. (2.) No. (3.) Yes. (4.) Yes. (5.) Yes.	—	—	38	—
BRISTOL PORT RAILWAY AND PIERS.	No continuous brakes	—	—	—	—	—
CAMBRIAN - -	Vacuum - -	(1.) Yes. Applied only by engine-driver. (2.) Self-acting on vans in case of a break-away. (3.) Yes. (4.) Yes. (5.) Yes.	—	*10	*52	13
CHESHIRE LINES COMMITTEE.	Vacuum automatic -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	* In process of conversion to automatic working.		of which 25 are fitted with automatic vacuum brake gear.	
	Vacuum - -	(1.) Yes. Capable of being applied by driver only. (2.) No. (3.) Yes. (4.) Yes. (5.) Yes.			318 and 3 saloons.	
COLNE VALLEY AND HALSTEAD.	Westinghouse automatic.	(1.) Guard and driver. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	2 tank	—	4	6
CORRIS - - -	No continuous brakes	—	—	—	—	—
EAST AND WEST JUNCTION.	Westinghouse automatic.	(1.) Yes. (2.) Yes. (3.) Yes, if fitted. (4.) Yes, when required. (5.) Yes.	3	—	8	—
EASTERN AND MIDLANDS.	Westinghouse automatic.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes, on main line. (5.) Yes.	17	—	52	26
FESTINIOG - -	No continuous brakes	—	—	—	—	—
FURNESS - -	Vacuum automatic - (Smith's.)	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes, except india-rubber connections.	19 engines, and tenders.	7 engines, and tenders.	74	11
GARSTANG AND KNOT END.	Newall's patent -	(1.) No. Guard only. (2.) No. (3.) Yes. (4.) Yes. (5.) Yes.	—	—	11	—
	No continuous brakes	—	—	—	—	—
GREAT EASTERN -	Westinghouse automatic.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	437 engines, 208 tenders.	2	2,484	3
					28 of these are fitted with the vacuum pipes.	1 of these is also fitted with vacuum pipes.

NOTE.—In Return No. 1 the amount and description of stock fitted with two or more descriptions of continuous

No. 1.

DESCRIPTION of CONTINUOUS BRAKE POWER in use on the Passenger Trains Railways.

CONTINUOUS BRAKES.		AMOUNT OF STOCK NOT FITTED WITH CONTINUOUS BRAKES.		AMOUNT OF STOCK FITTED DURING THE ABOVE SIX MONTHS.				Special Rules under which the Continuous Brakes are worked.
Vehicles.		Number of Engines and Tenders used for Passenger Trains.	Number of Passenger Carriages and other Vehicles used for Passenger Trains.	Number of Engines and Tenders (used for Passenger Trains) in which the Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of Passenger Carriages and other Vehicles used for Pas- senger Trains.		
Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for connect- ing the Brake.					Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for connect- ing the Brake.	
—	—	—	—	—	—	—	—	—
—	—	2	2	—	—	—	—	Same as London and North-Western, <i>see page</i> . The brake is used for every stoppage.
—	—	31	5	—	—	—	—	—
—	—	2	19	—	—	—	—	—
7	15	52	112	—	—	1	1	The brakes are not used for every stoppage. For special rules <i>see page 93.</i>
—	—	—	—	—	—	6	—	The brakes are used for every stoppage.
—	52	—	—	—	—	—	3	
1	1 horse box	2	9	1	—	1	—	Usual Westinghouse rules.
—	—	3	11	—	—	—	—	—
3 brake vans	2 horse boxes	4	5	—	—	—	—	Not used for every stoppage but only in cases of emergency.
6	59 (20 also fitted with vacuum pipes.)	5	24	—	—	—	8 2 of which are fitted with vacuum brakes as well.	The rules of the Westinghouse Brake Co. (Limited), and of the Vacuum Brake Company, Limited, <i>see p. 94.</i>
—	—	8	59	—	—	—	—	—
18 vans	7 vans, 2 milk trucks, 20 carriage trucks, 21 horse boxes, 10 meat vans	8 engines	144	—	—	7	2	The brakes are used for every stoppage. For special rules <i>see page 94.</i>
5	—	—	—	—	—	—	—	—
—	—	2	4	—	—	—	—	—
793 1/10 of these are also fitted with vacuum pipes.	44 1 of these is also fitted with vacuum pipes.	—	—	—	—	71	—	Drivers are not to rely on continuous brakes when approaching junctions or terminal stations. The brake is used for every stoppage.

brakes or pipes and connections are printed in italics and not included in total on p. 31. For Summary, see p. 32.

NAME OF RAILWAY COMPANY.	Name and Description of Brake or Brakes adopted by the Company, and in use on Passenger Trains on Lines worked by them.	(1.) Whether the Brakes are instan- taneous in action, and capable of being applied by engine-driver and guards. (2.) Whether self-acting. (3.) Whether capable of being applied to every vehicle of a train. (4.) Whether in regular use in daily working. (5.) Whether the materials employed are of a durable character, easily maintained, and kept in order.	AMOUNT OF STOCK FITTED WITH			
			Number of Engines and Tenders (used for Passenger Trains) in which the Continuous Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of	
					Passenger Carriages.	Fitted only with Chain or Pipes and Con- nections for connecting the Brake.
GREAT NORTHERN	Vacuum automatic -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	494 engines, 394 tenders.	15 engines, 10 tenders.	1,772 G.N. 137 East Coast Joint Stock, 3 Pullman cars.	7 G.N.
	The Vacuum -	(1.) The brakes are instantaneous in action, and capable of being applied by driver and guard. (2.) No. (3.) Yes. (4.) Yes. (5.) Yes.	42 engines, 42 tenders.	1 engine 1 tender.	114 G.N.	—
	Westinghouse auto- matic.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	—	—	2 G.N., 137 East Coast Joint Stock.	208 G.N. 3 Pullman cars.
GREAT WESTERN -	Automatic vacuum -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	—	1,440	3,671	—
	Fay's hand -	(1.) Applied by guard only. (2.) No. (3.) No. To four or five carriages only. (4.) Yes. (5.) Yes.	—	—	156	—
HULL, 'BARNSELEY, AND WEST RIDING JUNCTION.	Westinghouse auto- matic.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	21 engines, 16 tenders.	—	85	—
	Vacuum automatic -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	12 engines, 12 tenders.	—	—	—
ISLE OF WIGHT -	No continuous brakes	—	—	—	—	—
ISLE OF WIGHT CENTRAL.	Clark's chain brake -	(1.) Quick in action; applied by guard only. (2.) Not self-acting. (3.) Yes. (4.) Yes. (5.) Yes.	—	—	4	—
LANCASHIRE AND YORKSHIRE.	Vacuum automatic -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes, excepting the india-rubber connections, and sleeves in engines.	218 tender engines and 164 tank engines. In addition to the above 275 goods tender engines are fitted with automatic vacuum brakes for ordinary and special pas- senger work if required.	—	2,208 and 541 duplicates.	—
	Fay's -	(1.) Yes, and can be made capable of being applied by driver and guard. (2.) No. (3.) Yes, but they are never applied to more than 5 carriages of a train. (4.) Yes. (5.) Yes.	—	—	2	—
	Newall's -	—	—	—	—	—

CONTINUOUS BRAKES.		AMOUNT OF STOCK NOT FITTED WITH CONTINUOUS BRAKES.		AMOUNT OF STOCK FITTED DURING THE ABOVE SIX MONTHS.				Special Rules under which the Continuous Brakes are worked.
Vehicles.		Number of Engines and Tenders used for Passenger Trains.	Number of Passenger Carriages and other Vehicles used for Passenger Trains.	Number of Engines and Tenders (used for Passenger Trains) in which the Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of Passenger Carriages and other Vehicles used for Pas- senger Trains.		
Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for con- necting the Brake.					Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for con- necting the Brake.	
250 G.N. 23 East Coast Joint Stock, luggage, &c. vans.	170 horse boxes, 116 carriage trucks, 3 par- cel, &c. vans, 316 fish, &c. waggons.	—	—	44 engines, 38 tenders.	1 engine and tender.	50 G.N. pas- senger car- riages, 5 G.N. luggage, &c. vans, 15 E.C.J.S. passenger carriages.	1 G.N. pas- senger carriage, 1 G.N. car- riage truck, 25 G.N. fruit waggons.	See page 96. The brake is used for every stoppage.
12 G.N. luggage, &c. vans.	—	—	—	—	—	—	—	See page 96. The brake is used for every stoppage.
23 East Coast Joint Stock luggage, &c. vans.	413 vehicles.	Note.—The stock shown as fitted with the brake is included above.				15 E.C.J.S. passenger carriages.	3 G. N. passenger carriages, 2 G. N. luggage vans, 25 G.N. fruit waggons.	—
515	631	—	—	—	152	127	(Brake taken off 8.)	Brake is used for every stoppage. For regulations see page 97.
—	—	—	—	—	—	(Brake taken off 16 vehicles)	—	Brake is used for every stoppage.
—	81	1	—	—	—	—	—	} The brakes are used for every stoppage.
—	65 (included above).	—	—	1 engine, 1 tender.	—	—	—	
—	—	8 tank	52, and 132 waggons.	—	—	—	—	—
—	—	7	23	—	—	—	—	Rules usual with railway com- panies.
414 and 63 duplicates.	—	11	22	2 passenger tank engines, and 85 goods tender engines.	—	58 and 2 duplicates.	—	The brakes are used for every stoppage. For copy of printed instructions, see page 98.
4	—	—	—	—	—	—	—	} Are not allowed to skid.
16	—	—	—	—	—	—	—	

NAME OF RAILWAY COMPANY.	Name and Description of Brake or Brakes adopted by the Company, and in use on Passenger Trains on Lines worked by them.	(1.) Whether the Brakes are instantaneous in action, and capable of being applied by engine-driver and guards. (2.) Whether self-acting. (3.) Whether capable of being applied to every vehicle of a train. (4.) Whether in regular use in daily working. (5.) Whether the materials employed are of a durable character, easily maintained, and kept in order.	AMOUNT OF STOCK FITTED WITH			
			Number of Engines and Tenders (used for Passenger Trains) in which the Continuous Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of	
					Passenger Carriages.	Fitted only with Chains or Pipes and Connections for connecting the Brake.
LANCASHIRE AND YORKSHIRE—cont.	Vacuum automatic and Westinghouse.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes, except india-rubber connections.	—	—	2	—
					Note.—42 carriages fitted with complete vacuum automatic brake gear, also Westinghouse pipes, are included in the number of vehicles fitted with the vacuum automatic brake. 51 waggons fitted with vacuum automatic brake gear complete and 18 waggons fitted with vacuum automatic pipes only.	
LISKEARD AND CARDON.	Walter Parker Smith's automatic.	(1.) Yes, by guard only. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	—	—	3	—
LONDON AND NORTH-WESTERN.	Automatic vacuum -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	The engines and tenders are fitted with a separate steam brake, which, however, is actuated by the same handle used for applying the vacuum brake.	634 (There are also 462 other engines fitted which can be used for working passenger trains.)	2,319 (195 of these are also fitted with the Westinghouse brake).	—
	Simple vacuum	(1.) Yes; is applied by the driver. (2.) Self-acting on the vans in case of a breakaway. (3.) Yes. (4.) Yes. (5.) Yes.	See above	40* (There are also 13* other engines fitted which can be used for working passenger trains.)	1,637 (60 of these are also fitted with Westinghouse brake.)	15
	Clark's chain, better known as Clark and Webb's.*	(1.) The brake is practically instantaneous in action, the wheels having to make about three revolutions before it is fully on. (2.) Self-acting in sections in case of a breakaway, but not from any other cause. It cannot creep on when not required to do so whilst the engine is running at speed, all danger on that score being consequently avoided. (3.) The brake is capable of being applied to every vehicle in the train when the stock is fitted. (4.) The brake is only to be used when specially quick stops are required, but it is tested at the first stop made by each train, and the connections are tried before starting. NOTE.—In close coupled or "omnibus" trains, such as those running over the North London and Metropolitan District Railways, half the brake power is used for the ordinary stops, the other half and the power brake on the engine being used on emergency, or when specially quick stops are required. (5.) Yes.	—	677 (439 engines and tenders, and 238 tank engines.) Out of this number 667 are fitted with power brake. All the above engines, except 24, are fitted with screw reversing gear, which enables the driver, when the engine is running at speed, to bring the whole power of the engine on the opposite side of the piston, and thus acts as a powerful brake.	775	—
	Fay's continuous	(1.) No. (2.) No, applied by guard only. (3.) Yes (4.) Yes. (5.) Yes.	—	—	44	—

* Exclusive of the engines also fitted with automatic vacuum brake.

CONTINUOUS BRAKES.		AMOUNT OF STOCK NOT FITTED WITH CONTINUOUS BRAKES.		AMOUNT OF STOCK FITTED DURING THE ABOVE SIX MONTHS.				Special Rules under which the Continuous Brakes are worked.
Vehicles.		Number of Engines and Tenders used for Passenger Trains.	Number of Passenger Carriages and other Vehicles used for Passenger Trains.	Number of Engines and Tenders (used for Passenger Trains) in which the Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of Passenger Carriages and other Vehicles used for Pas- senger Trains.		
Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for con- necting the Brake.					Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for con- necting the Brake.	
—	—	—	—	—	—	—	—	The brakes are used for every stoppage. For special rules see page 99.
—	—	3	8	—	—	—	—	
694 (5 of these are also fitted with the Westing- house brake.)	—	—	26	—	114 (9 of those returned in previous half years have been since broken up.)	554	—	
188 (13 of these are also fitted with Westinghouse brake.)	1,174	—	—	—	42 (15 of those returned in previous half years have been since cut up.)	—	—	
15	4	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—

NAME OF RAILWAY COMPANY.	Name and Description of Brake or Brakes adopted by the Company, and in use on Passenger Trains on Lines worked by them.	(1.) Whether the Brakes are instantaneous in action, and capable of being applied by engine-driver and guards. (2.) Whether self-acting. (3.) Whether capable of being applied to every vehicle of a train. (4.) Whether in regular use in daily working. (5.) Whether the materials employed are of a durable character, easily maintained, and kept in order.	AMOUNT OF STOCK FITTED WITH			
			Number of Engines and Tenders (used for Passenger Trains) in which the Continuous Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of Passenger Carriages.	
					Fitted with Brake Gear complete.	Fitted only with Chain or Pipes and Connections for connecting the Brake.
LONDON AND NORTH-WESTERN AND CALEDONIAN. (West Coast.)	Automatic vacuum -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	See Note A.		184 C.	—
	Simple vacuum	(1.) Yes; is applied by the driver. (2.) Self-acting on the vans in case of a breakaway. (3.) Yes. (4.) Yes. (5.) Yes.	See Note A.		16 C.	—
LONDON AND SOUTH-WESTERN.	Vacuum automatic -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	483 engines and 363 tenders.	13 engines	1,778	268
LONDON, BRIGHTON, AND SOUTH COAST.	Westinghouse continuous automatic air.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	224 tank. 124 tender. (These include a number of goods engines which occasionally work passenger trains.)	—	2,166	46
LONDON, CHATHAM, AND DOVER.	Westinghouse automatic air.	(1.) The brakes get into action very quickly, and can be applied by engine-driver and guard. (2.) In case of a train parting and breaking connection pipes, or failure of working parts of brake, the brake is self-acting. (3.) Yes. (4.) Yes. (5.) The materials generally are of a durable character, except the india-rubber or hose coupling connections between the carriages, which have given much trouble by bursting. Careful attention is required to keep the brakes in working order.	81	—	501	2 saloons
	Automatic vacuum -	(1.) The brakes are instantaneous in action, and capable of being applied by engine-driver and guards. (2.) In case of a train parting and breaking connection pipes, or failure of working parts of brake, the brake is self-acting. (3.) Applied to every vehicle in the train. (4.) Yes, in regular use in daily working. (5.) The materials generally are of a durable character.	2	—	9	—
LONDONDERRY -	Westinghouse automatic.	(1.) Instantaneous in action. (2.) Can be applied by driver and guard. (3.) Can be applied to every vehicle of a train. (4.) In daily use. (5.) Materials of the best kind, and kept in order.	3 tank engines.	—	16	—
LONDON, TILBURY, AND SOUTHEAST.	Westinghouse automatic.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	30	—	237	—
	Clark and Webb's chain.	(1.) Applied by guard. (2.) No. (3.) Yes. (4.) Little used. (5.) Yes.	—	—	10	8
MANCHESTER AND MILFORD.	No continuous brakes.	—	—	—	—	—
MANCHESTER, SHEFFIELD, AND LINCOLNSHIRE.	Vacuum automatic -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	164 and 157* goods engines.	7	701 3 dining cars, 6 saloons.	92
	Vacuum -	(1.) Yes. Capable of being applied by engine-driver only. (2.) No. (3.) Yes. (4.) Yes. (5.) Yes.	9 and 114* goods engines.	5	105	13 and 1 saloon.
MANCHESTER SOUTH JUNCTION AND ALTRINCHAM.	Smith's vacuum	(1.) Almost instantaneous, applied by engine-drivers only. (2.) No. (3.) Yes. (4.) Yes. (5.) Yes.	9	1	119	—

* Available for passenger trains as occasion may require.

CONTINUOUS BRAKES.		AMOUNT OF STOCK NOT FITTED WITH CONTINUOUS BRAKES.		AMOUNT OF STOCK FITTED DURING THE ABOVE SIX MONTHS.				Special Rules under which the Continuous Brakes are worked.
Vehicles.		Number of Engines and Tenders used for Passenger Trains.	Number of Passenger Carriages and other Vehicles used for Passenger Trains.	Number of Engines and Tenders (used for Passenger Trains) in which the Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of Passenger Carriages and other Vehicles used for Pas- senger Trains.		
Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for connect- ing the Brake.					Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for connect- ing the Brake.	
100 C. 5 C.	— —	See Note A. See Note A.		See Note A. See Note A.		43 —	— —	— —
NOTE A.—There are no joint engines and tenders, the carriages being worked in the ordinary trains over each Company's line by its own engines and tenders. NOTE B.—This Return applies to West Coast passenger carriages and other vehicles, so far only as they run over the London and North-western Railway to or from Carlisle. NOTE C.—All these vehicles are fitted with the Westinghouse automatic pressure brake also.								
655	413	—	—	22 engines and 7 tenders.	3	73	—	For instructions see page 102. Brake is used for every stoppage. See page 104. The brake is used for every stoppage.
465	126	—	20	6 tank 5 tender engines.	—	20	—	
65	2 luggage vans.	59 (31 tanks)	470	25	—	212	—	Brake is used for every stoppage For special rules see page 104.
3	3	—	—	—	—	—	—	Brake is used for every stoppage. For special rules see page 105.
2 vans	—	—	—	—	—	—	—	Ordinary rules.
8	6	—	—	—	—	—	—	The brake is used for every stoppage. For special rules see page 105.
—	—	—	—	—	—	—	—	
—	—	4	18	—	—	—	—	
10	—	—	—	38	—	29	—	The brakes are used for every stoppage.
1	189	—	—	—	—	—	24	
—	1	1	1	—	—	—	—	The brake is used for every stoppage.
The engine driver must not depend entirely upon the power and action of the brake, but when approaching terminal stations or junctions must have his train so well under control, that it may be brought to a standstill with the hand brakes and without the use of the continuous brake. The hand brakes in guards' vans to be kept free in order that the brakes may be used in cases of emergency.								

NAME OF RAILWAY COMPANY.	Name and Description of Brake or Brakes adopted by the Company, and in use on Passenger Trains on Lines worked by them.	(1.) Whether the Brakes are instan- taneous in action, and capable of being applied by engine-driver and guards. (2.) Whether self-acting. (3.) Whether capable of being applied to every vehicle of a train. (4.) Whether in regular use in daily working. (5.) Whether the materials employed are of a durable character, easily maintained, and kept in order.	AMOUNT OF STOCK FITTED WITH			
			Number of Engines and Tenders (used for Passenger Trains) in which the Continuous Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of	
					Passenger Carriages.	Fitted only with Chains or Pipes and Con- nections for connecting the Brake.
					Fitted with Brake Gear complete.	
MARYPORT AND CARLISLE.	No continuous brakes.	—	—	—	—	—
MAWDDWY -	No continuous brakes.	—	—	—	—	—
MERSET -	The vacuum continu- ous automatic brake, with uni- versal coupling.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	6 tank engines.	9 tank engines fitted with a steam brake arranged to work auto- matically with continuous brakes.	79	—
METROPOLITAN DIS- TRICT.	Westinghouse air pressure.	(1.) Practically instantaneous. Applied by drivers only at every stoppage. (2.) No. (3.) Yes. (4.) Yes. (5.) Yes.	54 engines	—	350	—
METROPOLITAN -	Smith's vacuum	(1.) Practically instantaneous, and capable of being applied by driver only. (2.) No. (3.) Yes. (4.) Yes. (5.) Yes.	66 tank engines.	—	328	—
MIDLAND -	Westinghouse auto- matic air.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Some of the materials are durable, others not.	46 (All are fitted also with apparatus for working the vacuum automatic brake on train.)	—	69	83
	Westinghouse auto- matic air brake on Midland Scotch Joint Stock.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Some of the materials are durable, others not.	—	—	65	—
	Vacuum automatic (non-leak off).	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Some of the ma- terials are durable, others not.	2 fitted with automatic vacuum brake complete.	861 with automatic steam brakes to engine and tender wheels combined with vacuum automatic brake for train.	2,568	—
	Vacuum automatic (leak off.)	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Some of the materials are durable, others not.	—	47 (Fitted with steam brakes to engine and tender wheels combined with vacuum automatic brake for train.)	—	26
	Smith's vacuum	(1.) Nearly instantaneous and applied by driver. (2.) No. (3.) Yes. (4.) Yes. (5.) Some of the materials are durable, others not.	—	—	—	2

CONTINUOUS BRAKES.		AMOUNT OF STOCK NOT FITTED WITH CONTINUOUS BRAKES.		AMOUNT OF STOCK FITTED DURING THE ABOVE SIX MONTHS.				Special Rules under which the Continuous Brakes are worked.
Vehicles.		Number of Engines and Tenders used for Passenger Trains.	Number of Passenger Carriages and other Vehicles used for Passenger Trains.	Number of Engines and Tenders (used for Passenger Trains) in which the Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of Passenger Carriages and other Vehicles used for Pas- senger Trains.		
Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for con- necting the Brake.					Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for con- necting the Brake.	
—	—	8 (Fitted with powerful steam brakes.)	60	—	—	—	—	—
—	—	2	5	—	—	—	—	—
—	2 vans 1 truck.	—	—	—	—	—	—	See page 107. Brakes are used for every stoppage.
—	—	—	—	—	—	—	—	—
—	14 carriage trucks.	—	—	—	—	—	—	See page 107. The brake is used for every stop- page.
48	150	—	—	—	—	—	4	See page 108. The brakes are used for all stoppages.
20	—	—	—	—	—	—	—	—
1,422	—	—	—	—	89	196	—	—
5	11	—	—	—	—	—	3	—
—	6	—	—	—	—	—	—	—

NAME OF RAILWAY COMPANY.	Name and Description of Brake or Brakes adopted by the Company, and in use on Passenger Trains on Lines worked by them.	(1.) Whether the Brakes are instantaneous in action, and capable of being applied by engine-driver and guards. (2.) Whether self-acting. (3.) Whether capable of being applied to every vehicle of a train. (4.) Whether in regular use in daily working. (5.) Whether the materials employed are of a durable character, easily maintained, and kept in order.	AMOUNT OF STOCK FITTED WITH			
			Number of Engines and Tenders (used for Passenger Trains) in which the Continuous Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of Passenger Carriages.	
					Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for connecting the Brake.
MIDLAND AND SOUTH-WESTERN JUNCTION.	The Company's trains are now being fitted with the automatic vacuum brake, which is to some extent in use.	—	—	3	9	—
NEATH AND BRECON	No continuous brakes.	—	—	—	—	—
NORTH-EASTERN	Westinghouse automatic. 					

CONTINUOUS BRAKES.		AMOUNT OF STOCK NOT FITTED WITH CONTINUOUS BRAKES.		AMOUNT OF STOCK FITTED DURING THE ABOVE SIX MONTHS.				Special Rules under which the Continuous Brakes are worked.
Vehicles.		Number of Engines and Tenders used for Passenger Trains.	Number of Passenger Carriages and other Vehicles used for Passenger Trains.	Number of Engines and Tenders (used for Passenger Trains) in which the Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of Passenger Carriages and other Vehicles used for Pas- senger Trains.		
Other Vehicles used for Passenger Trains.	Fitted only with Chains or Pipes and Connections for con- necting the Brake.					Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for con- necting the Brake.	
—	15	3	17	—	3	6	—	—
—	—	5 engines (Used for mixed trains.)	6 (Used for mixed trains.)	—	—	—	—	—
760	8	1 small tank engine.	1 special carriage, 1 other vehicle.	21 engines, 12 tenders.	5 engines, 5 tenders.	40 carriages	—	See page 110. The brake is used for every stop- page.
NOTE.—The carriages above referred to do not include those belonging jointly to the East Coast companies which mainly compose the express and fast trains running between London and Scotland, and which are fitted with continuous brakes.								
—	—	—	—	—	—	18 carriages and 4 other vehicles.	56 carriages, 66 other vehicles.	The brake is used for every stop- page.

The Company have 865 vehicles (which are not included in their passenger stock, but which occasionally run with passenger trains) fitted with brakes, as below :—

11 with Westinghouse brake gear complete.

854 with Westinghouse brake connecting pipes, and 573 of these are fitted with the vacuum automatic brake.

865 Total.

—	—	—	—	—	—	Standards. 2nd class 12 (to replace carriages duplicated).	—	The brakes are used for every stoppage.
Standards. Composite (saloon) 1		Standards. —	Duplicates. 2nd class 4					

NAME OF RAILWAY COMPANY.	Name and Description of Brake or Brakes adopted by the Company, and in use on Passenger Trains on Lines worked by them.	(1.) Whether the Brakes are instan- taneous in action, and capable of being applied by engine-driver and guards. (2.) Whether self-acting. (3.) Whether capable of being applied to every vehicle of a train. (4.) Whether in regular use in daily working. (5.) Whether the materials employed are of a durable character, easily maintained, and kept in order.	AMOUNT OF STOCK FITTED WITH			
			Number of Engines and Tenders (used for Passenger Trains) in which the Continuous Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of	
					Passenger Carriages.	Fitted only with Chain or Pipes and Con- nections for connecting the Brake.
NORTH STAFFORD- SHIRE.	Vacuum - -	(1.) Yes. Driver only. (2.) No. (3.) Yes. (4.) Yes. (5.) Yes.	28 tender engines, with vacuum brake on tender and steam brake on engine.	38 (9 engines and tenders and 29 tank engines) fitted with steam brakes.	147	39
	Westinghouse -	(1.) Yes. Driver only. (2.) No. (3.) Yes. (4.) Yes. (5.) Yes.	—	—	—	4
	Automatic vacuum -	(1.) Yes; applied by driver and guard. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	2 tender and 1 tank.	—	6	—
NORTH WALES NAR- ROW GAUGE.	No continuous brakes.	—	—	—	—	—
PIMBROKE AND TENBY.	No continuous brakes.	—	—	—	—	—
PONTYPRIDD, CAER- PHILLY, AND NEW- PORT.	Fay's - -	(1.) Not instantaneous. By guard only. (2.) No. (3.) Yes. (4.) Yes. (5.) Yes.	—	—	4	—
RAVENGLASS AND ESKDALE.	No continuous brakes.	—	—	—	—	—
RHONDDA AND SWANSEA BAY.	Westinghouse -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	2	—	7	—
	Automatic vacuum -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	5 tank	—	18	—
RHYMNEY - -	Westinghouse auto- matic.	(1.) Instantaneous in action and capa- ble of being applied by drivers and guards. (2.) Self-acting. (3.) Ca- pable of being applied to every vehi- cle of a train. (4.) In use daily. (5.) Durable and easily maintained.	4 tank engines, 6 tender engines. Brake applied to tender wheels. Steam brake on wheels of tender engines.	7 tank engines.	32	18
SEACOMBE, HOY- LAKE, AND DEE- SIDE.	Automatic vacuum	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	7	—	16	—
SEVERN AND WYE AND SEVERN BRIDGE.	Clark's chain -	(1.) Yes. (2.) No. (3.) Yes, of pas- senger carriages. (4.) Yes. (5.) Yes.	—	12 engines All engines have independent brakes, but driver by means of a cord has control of the brakes on the passenger carriages.	6	6

CONTINUOUS BRAKES.		AMOUNT OF STOCK NOT FITTED WITH CONTINUOUS BRAKES.		AMOUNT OF STOCK FITTED DURING THE ABOVE SIX MONTHS.				Special Rules under which the Continuous Brakes are worked.
Vehicles.		Number of Engines and Tenders used for Passenger Trains.	Number of Passenger Carriages and other Vehicles used for Passenger Trains.	Number of Engines and Tenders (used for Passenger Trains) in which the Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of Passenger Carriages and other Vehicles used for Pas- senger Trains.		
Other Vehicles used for Passenger Trains.	Fitted only with Chains or Pipes and Connections for con- necting the Brake.					Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for con- necting the Brake.	
29	81	—	65	3 tenders (steam brake on engines and vacuum on tender).	2 tank engines, also fitted with steam brake.	19	3	See page 112.
—	—	—	—	—	—	—	—	—
—	—	—	—	2 tender pre- viously fitted with steam and vacuum brakes also 1 tank previously fitted with steam brake and vacuum appara- tus converted into automatic.	—	—	—	—
—	—	3	8 carriages, 114 waggons.	—	—	—	—	—
—	—	7 engines, 5 tenders.	33	—	—	—	—	—
—	—	2	4	—	—	—	—	—
—	—	2	4	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	—	—	—	7	2	25	—	—
8 partly brake vans and partly 3rd class. brake vans.	4 brake vans, 1 carriage truck, 1 horse box.	—	—	—	—	1	—	Guards and drivers are at all times to satisfy themselves that the brake is in proper order, and to make use of the con- tinuous brake on every occasion for regulating the stoppage of trains. In approaching terminal stations the continuous brake must only be used in cases of emergency, the driver taking care to reduce the speed of his train so that it may be brought to a stand by the hand brake of the engine or tender alone. The brakes are used for every stoppage.
8	—	2	19	—	—	—	—	—
—	—	3, but have indepen- dent brakes.	Light vans and trucks occasionally run with passenger trains, but these vehicles have only ordinary brakes.	—	—	—	1	The ordinary regu- lations as to appli- cation of brakes. The brake is used for every stoppage.

NAME OF RAILWAY COMPANY.	Name and Description of Brake or Brakes adopted by the Company, and in use on Passenger Trains on Lines worked by them.	(1.) Whether the Brakes are instan- taneous in action, and capable of being applied by engine-driver and guards. (2.) Whether self-acting. (3.) Whether capable of being applied to every vehicle of a train. (4.) Whether in regular use in daily working. (5.) Whether the materials employed are of a durable character, easily maintained, and kept in order.	AMOUNT OF STOCK FITTED WITH			
			Number of Engines and Tenders (used for Passenger Trains) in which the Continuous Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of	
					Passenger Carriages.	Fitted only with Chains or Pipes and Con- nections for connecting the Brake.
SOMERSET AND DORSET JOINT COMMITTEE.	Vacuum automatic -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Some of the materials are durable, others not.	30 (including 15 tank engines.)	—	104 (4 have connecting pipes for Westing- house brake.)	—
	Wilkin and Clark's chain.	(1.) Yes. (2.) No. (3.) Fitted only to carriages and vans. (4.) Yes. (5.) Yes.	—	—	6	—
SOUTH-EASTERN -	Smith's vacuum -	(1.) Nearly instantaneous in action, and capable of being applied by engine- driver only. (2.) Not self-acting. (3.) Yes. (4.) Yes. (5.) Some durable, others not very durable.	101 engines, 73 tenders.	8 engines, 4 tenders.	772	412 besides 379 vehicles also fitted with automatic brake.
	Automatic vacuum -	(1.) Instantaneous in action, and capable of being applied by engine-driver only. (2.) Self-acting. (3.) Yes. (4.) Yes. (5.) Some durable, others not very durable.	136 engines, 89 tenders. (the above engines work either automatic or simple brakes.)	—	409	*15 besides 35 vehicles also fitted with simple vacuum brake.
SOUTHWOLD - -	No continuous brakes.	—	—	—	—	—
TAFF VALE - -	Smith's automatic vacuum.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	33	—	169	1
TALYLYNN - -	No continuous brakes.	—	—	—	—	—
WEST LANCASHIRE -	Westinghouse automa- tic continuous.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	9 engines 7 tenders.	—	18	—
WEST SOMERSET MINERAL.	No continuous brakes.	—	—	—	—	—
WREXHAM, MOLD, AND CONNAN'S QUAY.	Clark and Webb's chain.	(1.) Instantaneous in action. Capable of being applied by engine-driver and guard. (2.) Yes. (3.) Yes, to every vehicle so fitted. (4.) Yes. (5.) Yes.	—	—	33	—

* Fitted with pipes and connections for simple and automatic vacuum brakes.

CONTINUOUS BRAKES.		AMOUNT OF STOCK NOT FITTED WITH CONTINUOUS BRAKES.		AMOUNT OF STOCK FITTED DURING THE ABOVE SIX MONTHS.				Special Rules under which the Continuous Brakes are worked.
Vehicles.		Number of Engines and Tenders used for Passenger Trains.	Number of Passenger Carriages and other Vehicles used for Passenger Trains.	Number of Engines and Tenders (used for Passenger Trains) in which the Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of Passenger Carriages and other Vehicles used for Pas- senger Trains.		
Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for con- necting the Brake.					Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for con- necting the Brake.	
44	—	—	—	—	—	—	—	See page 113.
—	—	—	—	—	—	—	—	The brakes are used for all stoppages.
168	278 (besides 15 vehicles fitted with automatic brake.)	5 engines, 1 tender.	31	—	5 engines, 4 tenders.	—	35	See page 114.
91	*213 (besides 61 vehicles also fitted with simple vacuum brake.)	—	—	55 engines, 38 tenders.	—	96	160	—
—	—	2	23	—	—	—	—	—
38	—	—	8	—	—	4	—	Continuous brake to be used at every stoppage, except at terminal stations, upon approaching which the speed of train must be so reduced as to enable driver to pull up with ordinary hand brake only.
—	—	2	5	—	—	—	—	
7	6	3	58	—	—	—	—	
—	—	1	3	—	—	—	—	The brake is used for every stoppage.
2 brake-vans.	—	2	—	—	—	22	—	No special rules necessary, as the chain brake is worked in conjunc- tion with hand brake for ordinary stopping purposes.

* Fitted with pipes for simple and automatic vacuum brakes.

NAME OF RAILWAY COMPANY.	Name and Description of Brake or Brakes adopted by the Company, and in use on Passenger Trains on Lines worked by them.	(1.) Whether the Brakes are instan- taneous in action, and capable of being applied by engine-driver and guards. (2.) Whether self-acting. (3.) Whether capable of being applied to every vehicle of a train. (4.) Whether in regular use in daily working. (5.) Whether the materials employed are of a durable character, easily maintained, and kept in order.	AMOUNT OF STOCK FITTED WITH			
			Number of Engines and Tenders (used for Passenger Trains) in which the Continuous Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of	
					Passenger Carriages.	Fitted only with Chains or Pipes and Con- nections for connecting the Brake.
SCOTLAND.						
AYRSHIRE AND WIG- TOWNSHIRE.	Westinghouse -	(1.) Can be applied by drivers and guards. (2.) Self-acting. (3.) Capable of being applied to every vehicle of a train. (4.) In regular use in daily working. Used for every stoppage.	4 applied to tender wheels. Steam brake on engine wheels.	—	6	4
	Chain - -	(1.) Can only be applied by guards. (2.) Not self-acting. (3.) Capable of being applied to every vehicle of a train. (4.) Not in regular daily use.	—	—	6	—
CALEDONIAN - -	Westinghouse auto- matic.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes, so far as the Company's Locomotive Superinten- dent has experience of their working.	245 tender and 24 tank. 11 engines and tenders, brake applicable to wheels of tender only.	22 tank, of which 12 are fitted with steam brake.	1,178	56
	Vacuum and West- inghouse combined.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes, so far as the Com- pany's Locomotive Superintendent has experience of their working.	—	—	51	7
	Steel McInnes chain	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes, so far as the Company's Locomotive Superinten- dent has experience of their working.	—	—	21	5
GLASGOW AND SOUTH-WESTERN.	Westinghouse auto- matic.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	90 and 4 tank	(Of the foregoing engines and tenders 84 are fitted to work automatic vacuum braked trains.)	321 (31 of these are also fitted with the automatic vacuum brake).	—
	Automatic vacuum -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	30 and 16 tank	—	359	—
GLASGOW, BARR- HEAD, AND KIL- MARNOCK.	No continuous brakes.	—	—	—	—	—
GREAT NORTH OF SCOTLAND.	Westinghouse auto- matic.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	40 and 3 tank	—	163	5
HIGHLAND	Newall's continuous hand.	(1.) Not instantaneous in action, and can only be applied by guard. (2.) No. (3.) No. (4.) Yes. (5.) Yes.	—	—	91	—
	Automatic vacuum -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	55	—	63	13
	Westinghouse -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	—	—	18	4

CONTINUOUS BRAKES.		AMOUNT OF STOCK NOT FITTED WITH CONTINUOUS BRAKES.		AMOUNT OF STOCK FITTED DURING THE ABOVE SIX MONTHS.				Special Rules under which the Continuous Brakes are worked.
Vehicles.		Number of Engines and Tenders used for Passenger Trains.	Number of Passenger Carriages and other Vehicles used for Passenger Trains.	Number of Engines and Tenders (used for Passenger Trains) in which the Brakes can be applied to the Wheels.	Number of Engines and Tender (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of Passenger Carriages and other Vehicles used for Pas- senger Trains.		
Other Vehicles used for Passenger Trains.						Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for con- necting the Brake.	
Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for con- necting the Brake.							
—	8	3	4	—	—	—	—	Westinghouse Co.'s.
4 and West- inghouse pipe also.	—	—	—	—	—	—	—	—
118 brake-vans, horse-boxes, &c.	667 brake vans, horse-boxes, &c.	2	24	6 engines and tenders.	—	32	7	See page 114.
47	399	—	—	—	—	25	7	—
8	—	—	—	—	—	—	—	—
50 (Of these 12 brake vans are also fitted with the automatic vacuum brake.)	193 horse boxes, fish and other vans are fitted with the Westinghouse and vacuum pipe connexions.	—	49	—	—	—	—	See page 118. No restriction re- garding use of brake except when stopping at terminal stations.
59	—	—	—	6 and 2 tank	—	28	—	
—	—	1	2	—	—	—	—	
34	230	15 of these 10 tender engines are fitted with steam brake attached to 4 coupled wheels of engine.	92	5	—	12	—	See page 119. The brake is used for all stoppages except at terminal stations.
47	—	25	106	—	—	—	—	Brake is used for all stoppages.
12	377	—	—	3	—	38	—	—
6	12	—	—	—	—	8	—	—

NAME OF RAILWAY COMPANY.	Name and Description of Brake or Brakes adopted by the Company, and in use on Passenger Trains on Lines worked by them.	(1.) Whether the Brakes are instan- taneous in action, and capable of being applied by engine-driver and guards. (2.) Whether self-acting. (3.) Whether capable of being applied to every vehicle of a train. (4.) Whether in regular use in daily working. (5.) Whether the materials employed are of a durable character, easily maintained, and kept in order.	AMOUNT OF STOCK FITTED WITH			
			Number of Engines and Tenders (used for Passenger Trains) in which the Continuous Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of	
					Passenger Carriages.	Fitted only with Chains or Pipes and Con- nections for connecting the Brake.
NORTH BRITISH -	Westinghouse auto- matic air.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	150 44 engines have air brake fitted to wheels of engine and tender. 43 tank engines have air brake fitted to wheels of engine. 63 engines have air brake fitted to wheels of tender only.	59	1,600	8
PORTPATRICK AND WIGTOWNSHIRE JOINT COMMITTEE.	No continuous brakes	—	—	—	—	—
IRELAND.						
BALLYCASTLE -	No continuous brakes.	—	—	—	—	—
BELFAST AND COUNTY DOWN.	No continuous brakes.	—	—	—	—	—
BELFAST AND NORTH- ERN COUNTIES.	Vacuum automatic -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	29 engines,	—	130	32
	Smith's vacuum * -	(1.) Yes. (2.) No. (3.) Yes. (4.) Yes. (5.) Yes.	6	—	10	5
BESSBROOK AND NEWRY.	Continuous brakes not adaptable to electric cars.	—	—	—	—	—
CASTLEBERG AND VICTORIA BRIDGE.	Westinghouse auto- matic.	(1.) Yes. (2.) Yes, when exclusively pas- senger. (3.) Yes. (4.) Yes. (5.) Yes.	2	—	5	—
CAVAN, LEITRIM, AND ROSCOMMON LIGHT.	Automatic vacuum -	(1.) Instantaneous; capable of being applied by driver and by guard. (2.) Self-acting. (3.) Every vehicle. (4.) In regular daily use. (5.) Durable and easily maintained.	8	—	12	—
CORK, BANDON, AND SOUTH COAST.	No continuous brakes.	—	—	—	—	—
CORK AND MACROOM DIRECT.	No continuous brakes.	—	—	—	—	—
CORK AND MUSKERRY LIGHT.	Automatic vacuum -	(1.) Yes. (2.) Automatic. (3.) Yes, to all carriages for conveyance of passengers and brake vans. (4.) Yes, on all trains. (5.) From experience up to the present they are easily kept in order.	4	4	14	—
CORK, BLACKROCK, AND PASSAGE.	No continuous brakes.	—	—	—	—	—

* Stock taken over with Ballymena and Larne Railway.

CONTINUOUS BRAKES:		AMOUNT OF STOCK NOT FITTED WITH CONTINUOUS BRAKES.		AMOUNT OF STOCK FITTED DURING THE ABOVE SIX MONTHS.				Special Rules under which the Continuous Brakes are worked.
Vehicles.		Number of Engines and Tenders used for Passenger Trains.	Number of Passenger Carriages and other Vehicles used for Passenger Trains.	Number of Engines and Tenders (used for Passenger Trains) in which the Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of Passenger Carriages and other Vehicles used for Pas- senger Trains.		
Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for connect- ing the Brake.					Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for connect- ing the Brake.	
—	468	—	215	2	Brake apparatus taken off 2.	66	4	See page 120.
—	4	6	21	—	—	—	—	—
—	—	3	10	—	—	—	—	—
—	—	20 and 9 tenders.	125	—	—	—	—	—
12	36	9 engines	9	3	—	—	—	See page 122. The brake is used for every stoppage except terminal.
—	—	—	—	—	—	—	—	—
—	—	2 electric- motor cars.	1 passenger carriage, 22 goods waggons.	—	—	—	—	—
2 vans	20 goods waggons.	—	—	—	—	—	—	Brakes used for every stoppage.
03 waggons, horse-boxes, 5 brake-vans,	3 ballast, 2 timber.	—	—	—	—	—	—	See page 122. Brakes used for every stoppage.
—	—	12 1 tender.	47	—	—	—	—	—
—	—	4 tank engines	13 carriages, 3 brake vans.	—	—	—	—	—
2	—	—	All passenger carriages are fitted with continuous brakes. There are 31 goods and coal waggons not fitted with the automatic brake.	—	—	—	—	See page 123.
—	—	3 tank engines	14	—	—	—	—	—

NAME OF RAILWAY COMPANY.	Name and Description of Brake or Brakes adopted by the Company, and in use on Passenger Trains on Lines worked by them.	(1.) Whether the Brakes are instantaneous in action, and capable of being applied by engine-driver and guards. (2.) Whether self-acting. (3.) Whether capable of being applied to every vehicle of a train. (4.) Whether in regular use in daily working. (5.) Whether the materials employed are of durable character, easily maintained, and kept in order.	AMOUNT OF STOCK FITTED WITH			
			Number of Engines and Tenders (used for Passenger Trains) in which the Continuous Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of Passenger Carriages.	
					Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for connecting the Brake.
DUBLIN, WICKLOW, AND WEXFORD.	Simple vacuum only	(1.) Instantaneous, by driver only. (2.) No. (3.) On all but vehicles fitted with pipes. (4.) Yes. (5.) Yes.	27 tank and 9 tender engines.	9 tender engines.	136 carriages.	34 carriages.
DUNDALK, NEWRY, AND GREENORE.	Automatic vacuum -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	—	—	4	3
FINN VALLEY -	No continuous brakes.	—	—	—	—	—
GREAT NORTHERN -	Smith's simple vacuum	(1.) Almost instantaneous. Applied by driver. (2.) Not self-acting. (3.) Yes. (4.) Yes. (5.) Yes.	90	—	378	—
GREAT SOUTHERN AND WESTERN.	Smith's vacuum -	(1.) By driver. (2.) No. (3.) Yes. (4.) Yes. (5.) Yes.	89 goods engines.	—	274	—
	Automatic vacuum -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	1	—	4	—
LONDONDERRY AND LOUGH SWILLY.	No continuous brakes.	—	—	—	—	—
MIDLAND GREAT WESTERN OF IRELAND.	Smith's vacuum -	(1.) Instantaneous in action. Applied by driver only. (2.) No. (3.) Yes, to all carriages of a train. (4.) Yes. (5.) Yes.	34	—	132	1
	Automatic vacuum -	(1.) Instantaneous in action. Applied by driver and guards. (2.) Yes. (3.) Yes, to all carriages of a train. (4.) Yes. (5.) Yes.	14	—	31	—
SLIGO, LEITRIM, AND NORTHERN COUNTIES.	Smith's vacuum -	(1.) Fairly so; engine driver only. (2.) No. (3.) Yes, if all coupled up. (4.) Yes. (5.) Yes.	5	—	17	—
WATERFORD AND CENTRAL IRELAND.	No continuous brakes.	—	—	—	—	—
WATERFORD AND LIMERICK.	Automatic vacuum -	See copy Rules - - - -	8	—	6	—
WATERFORD AND TRAMORE.	No continuous brakes.	—	—	—	—	—
WATERFORD, DUNGARVAN, AND LISMORE.	Smith's vacuum -	—	1 tank.	—	—	—
WEST CARBERRY -	No continuous brakes.	—	—	—	—	—
WEST CLARE -	Automatic vacuum -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	4 tank.	—	9	—
WEST DONEGAL -	No continuous brakes.	—	—	—	—	—
* TOTAL FOR THE UNITED KINGDOM			5,191	4,498	35,427	1,272

* NOTE.—These totals are the numbers of engines and carriages returned by the railway companies as fitted with continuous brakes. It will be observed, however, that some of the brakes so returned but very imperfectly fulfil that designation.

CONTINUOUS BRAKES.		AMOUNT OF STOCK NOT FITTED WITH CONTINUOUS BRAKES.		AMOUNT OF STOCK FITTED DURING THE ABOVE SIX MONTHS.				Special Notes under which the Continuous Brakes are worked.
Vehicles.		Number of Engines and Tenders used for Passenger Trains.	Number of Passenger Carriages and other Vehicles used for Passenger Trains.	Number of Engines and Tenders (used for Passenger Trains) in which the Brake can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of Passenger Carriages and other Vehicles used for Pas- senger Trains.		
Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for connect- ing the Brake.					Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for connect- ing the Brake.	
845 3/4 of these are also fitted with vacuum pipes.	9 1 of these is also fitted with vacuum pipes.	—	—	10 engines	—	122	—	Drivers are not to rely on continuous brakes when approaching junctions or terminal stations. The brake is used for every stoppage.
261 G.N. 27 East Coast Joint Stock	178 horse- boxes, 114 parcel, &c. vans, 328 fish, &c. waggons.	—	—	33 engines, 29 tenders.	—	48 G.N. pas- senger car- riages, 11 luggage, &c. vans, 3 E.C.J.S. passenger carriages, 4 luggage carriages.	10 horse boxes, &c. 12 covered meat waggons.	See page 92. The brake is used for every stoppage.
1 G.N. 27 East Coast Joint Stock luggage, &c. vans.	432 duplicates.	Note—The stock shown as fitted with the Westinghouse brake is included above.				3 G.N. passenger carriages, and 1 van and 30 E.C.J.S. passenger carriages and 4 vans.	1 passenger carriage and 10 horse boxes, &c. G.N.	—
569	615	—	—	—	125	123	(Brake taken off 16.)	Brake is used for every stoppage. For regulations see page 93.
—	—	—	—	—	—	(Brake taken off 29 vehicles)	—	Brake is used for every stoppage.
—	106	1 engine, 1 tender.	—	—	—	—	25	The brakes are used for every stoppage.
—	—	—	—	—	—	—	—	
—	—	8 tank	53, and 132 waggons.	—	—	—	—	
—	—	6	31	1	—	3	—	—
418 and 63 duplicates.	—	11	22	8 passenger tank engines, and 25 goods tender engines.	—	4 and 16 duplicates.	—	The brakes are used for every stoppage. For copy of printed instructions, see page 94.
4	—	—	—	—	—	—	—	Are not allowed to skid.
12	—	—	—	—	—	—	—	

EXTRACT from the FOREGOING RETURN showing the NUMBER of ENGINES, PASSENGER and other VEHICLES used for PASSENGER TRAINS which were fitted with TWO or MORE descriptions of CONTINUOUS BRAKES to provide for running Through Trains, and for interchange of Traffic.

NAME OF RAILWAY COMPANY.	Name of Brakes fitted to the Stock enumerated in Columns 4 to 7.	AMOUNT OF STOCK FITTED WITH BRAKES IN DUPLICATE.				
		Engines fitted complete.	Engines fitted with Apparatus for working the Brake.	Vehicles fitted complete.	Vehicles fitted with Pipes and Connections only.	
(1.)	(2.)	(3.)	(4.)	(5.)	(6.)	(7.)
CAMBRIAN - - -	Vacuum - - -	Automatic vacuum -	—	—	25	—
EASTERN AND MIDLANDS -	Westinghouse automatic “	Vacuum - - -	—	4	1	20
		Automatic vacuum -	—	4	—	—
		Clarke's chain - -	—	—	25	—
GREAT EASTERN - -	Westinghouse automatic	Vacuum - - -	—	—	—	170
GREAT NORTHERN - -	Vacuum automatic -	Westinghouse - -	—	—	162	624
HULL, BARNSLEY, AND WEST RIDING JUNCTION.	Westinghouse automatic	Automatic vacuum -	—	—	—	65
LANCASHIRE AND YORKSHIRE	Vacuum automatic -	Westinghouse - -	—	—	2	42
LONDON AND NORTH- WESTERN.	Automatic vacuum -	Simple vacuum - -	—	1,096	—	—
	Automatic vacuum -	Westinghouse - -	—	—	484	—
	Simple vacuum - -	Westinghouse - -	—	—	94	—
NORTH-EASTERN - -	Westinghouse automatic	Automatic vacuum -	86	—	81	516
	Westinghouse (pipes only).	Automatic vacuum -	—	—	—	573
SOMERSET AND DORSET -	Automatic vacuum -	Westinghouse - -	—	—	—	4
SOUTH-EASTERN - -	Automatic vacuum -	Smith's vacuum -	136	—	—	394
	Automatic vacuum (pipes and connec- tions only).	Smith's vacuum -	—	—	96	223
AYRSHIRE AND WIGTOWN- SHIRE.	Chain - - -	Westinghouse - -	—	—	—	4
CALEDONIAN - - -	Westinghouse automatic	Vacuum - - -	—	—	98	406
GLASGOW AND SOUTH- WESTERN.	Westinghouse automatic	Automatic vacuum -	—	84	43	—
	Westinghouse (pipes only).	Automatic vacuum -	—	—	—	193
TOTAL - - -			142	1,188	1,111	3,234

No. 2.

RETURN for Six Months ending on the 31st day of December 1889, of all CASES in which CONTINUOUS BRAKES have failed to act when required to be brought into Action, or have caused delay in the working of trains on Railways.

No. 2.

RETURN for Six Months ending on the 31st day of December 1889, of all CASES in which CONTINUOUS BRAKES have failed to act when required to be brought into Action, or have caused delay in the working of trains on Railways.

1.	2.	3.	4.	5.
Name of Railway Company.	Name or Description of Brake which failed or caused delay in any of the instances asked for in Column 4.	Date of Failure.	Instances under the three following heads separately, of :— 1. Failure or partial failure to act when required in case of an accident to a train, or a collision between trains being imminent. 2. Failure or partial failure to act under ordinary circumstances to stop a train when required. 3. Delay in the working of trains in consequence of defects in, or improper action of, the Brakes, distinguishing whether they arose from neglect or inexperience of servants, or failure of machinery or material.	Number of Miles run by Trains fitted with each description of Continuous Brake.
ENGLAND AND WALES.				
Aylesbury and Buckingham.	—	No failures reported.	—	Automatic Vacuum Brake. 11,364 miles.
Bishop's Castle -	—	No failures reported.	—	Webb's Chain Brake.
Brecon and Merthyr -	—	No failures reported.	—	Fay's Hand Brake. 83,735 miles.
Cambrian -	—	No failures reported.	—	Vacuum Brake. 127,030 miles.
Cheshire Lines Committee.	Vacuum Automatic.		1. Nil. 2. <i>Failure or partial failure to act under ordinary circumstances to stop a train when required.</i> Aug. 8 4.30 p.m. Hull to Liverpool overran platform at Stockport about a coach length. Due either to one of the van valves or ball valves momentarily sticking. Engine No. 445. No delay reported. 3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i> July 20 8.40 a.m. Liverpool to Hull. Brake partially applied itself when running between Liverpool and Warrington, and upon examination a washer was found to be deficient on hose-pipe of Manchester, Sheffield, and Lincolnshire horse-box No. 623. 2 minutes delay in discovering defect and supplying new washer. Aug. 24 10.35 a.m. Southport to Liverpool. 21 minutes lost in running. Brake applying itself, owing to van valve in brake-van No. 49 not closing properly. Valve damaged when putting in luggage. Neglect of staff. Piston of carriage No. 35 also stuck; due to ordinary wear and tear of gland.	808,696 miles.

1. Name of Railway Company.	2. Name or Descrip- tion of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 84.	5. Number of Miles run by Trains fitted with Continuous Brakes.
Cheshire Lines Com- mittee— <i>cont.</i>	Vacuum Auto- matic— <i>cont.</i>	Sept. 21	6.30 p.m. Liverpool to Manchester. 9 minutes lost in running. Leakage in train pipe, causing brake to go on. Union nut on engine No. 441 slacked back for want of being effectually screwed up. Neglect of staff.	
		Nov. 1	6.10 p.m. Manchester to Southport. Driver failed to release brake after application for stop at Altcar. Leakage in train pipe, due to drip trap nut dropping out. Neglect of staff. Engine No. 541.	
		" 22	4.30 p.m. Liverpool to Manchester. 5 minutes late start. Driver unable to get brake off, owing to hose couplings not being properly connected. Neglect of staff.	
		Dec. 3	8.5 p.m. Liverpool to Southport. 10 minutes lost in running, owing to brake going on from leakage due to presence of ice in ball valve. Engine No. 267.	
		" 19	7.25 a.m. Manchester to Liverpool. 3 minutes delay in starting from Irlam, owing to piston sticking on carriage No. 265. Defective gland; ordinary wear and tear.	
		—	No failures reported.	Vacuum Brake. 928 miles.
Colne Valley and Halstead.	—	No failures reported.	—	Westinghouse Automatic Brake. 14,000 miles.
East and West Junc- tion,	—	No failures reported.	—	Westinghouse Automatic Brake. 54,324 miles.
Eastern and Midlands	—	No failures reported.	—	Westinghouse Automatic Brake. 190,053½ miles.
Furness	Vacuum Auto- matic (Smith's). (26 engines fitted. See Return No. 1, p. 10.)		1 and 2. Nil.	235,058 miles.
			3. <i>Delay in the working of trains in con- sequence of defects in or improper action of the brakes.</i>	
		July 5	No. 81 up passenger was delayed 12 minutes between Silcroft and Millom, owing to vacuum of engine No. 75 being out of order. Cause unknown. Hand brakes used from Millom to Carnforth.	
		" 6	On starting, No. 20 down from Carnforth, the short steam-pipe of brake on engine No. 75 was found to be out of order, and hand brakes were used between Carnforth and Barrow. No delay.	
		" 14	Seven minutes delay to No. 3 up between Ravenglass and Drigg. The vacuum pipe of engine No. 73 was damaged when running through gates at Saltcoat crossing. Hand brakes used to Barrow.	
		Aug. 4	Delay of 5 minutes to No. 4 down, owing to breakage of connecting pipe on engine No. 74.	
		" 24	Delay of 5 minutes to No. 67 up at Cor- kickle, owing to brakes not coming off on London and North-Western coach. Defective coupling pipe.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
Furness— <i>cont.</i> - -	Vacuum Automatic (Smith's) — <i>cont.</i> —	Aug. 31 Nov. 1 No failures reported.	Delay of 5 minutes between St. Bees and Nethertown, owing to brakes going on and train coming to a stand. Delay of 3 minutes at Drigg on No. 27 down, owing to leakage in vacuum cylinder of van No. 13.	Newall's Patent Brake. 33,300 miles.
Great Eastern - - -	Westinghouse Brake. (439 engines fitted. See Return No. 1, page 10.)	Oct. 8 Nov. 25 Dec. 23 July 4 " 4 " 5 " 5 " 6 " 10 " 12 " 16 " 18 " 19 " 23 " 24 " 26 " 27 " 29 " 31 Aug. 1 " 2	1. Nil. 2. <i>Failure or partial failure to act under ordinary circumstances to stop a train when required.</i> Train overran Prittlewell platform, caused by fireman neglecting to open main stop-cock on engine No. 117. Train overran West Green platform, caused by fireman neglecting to open main stop-cock on carriage (No. unknown). Train overran Parkeston platform, caused by main stop-cock on engine No. 138 being closed. 3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i> Collar broke off main pipe on engine No. 709, at Whittlesford. Flexible pipe burst on S.C.C. No. 432, between Liverpool Street and Bishopsgate. Flexible pipe burst on T.C.C. No. 22, at Hethersett. Flexible pipe burst on Great Northern Railway Company's horse-box No. 1152, between Dullingham and Six Mile Bottom. Flexible pipe burst on T.C.C. No. 530, at Coborn Road. Flexible pipe burst on Midland Railway Company's horse-box No. 325, between Warren Hill and Snailwell Junction. Flexible pipe burst on engine No. 666, between Bishopsgate and Bethnal Green. Flexible pipe burst on T.C.C. No. 654, between Norwich and Trowse. Flexible pipe burst on horse-box No. 71, between Barroway siding and Ely. Flexible pipe burst on Great Northern Railway Company's horse-box No. 1152, between Barroway siding and Soham. Flexible pipe burst on compo. No. 384, between Parkeston and Wrabness. Flexible pipe burst on T.C.C. No. 343, between St. Ives and Swavesey. Flexible pipe burst on brake-van No. 7, between Melton and Wickham Market. Flexible pipe burst on T.C.C. No. 756, between Harold Wood and Brentwood. Union nut slacked back on pipe from pump to reservoir on engine No. 649, between Worstead and North Walsham. Flexible pipe burst on T.C.C. No. 514, between Emneth and Wisbech. Flexible pipe burst on compo. No. 105, between Salhouse and Whitlingham. Flexible pipe burst on compo. No. 376, between Halesworth and Darsham.	5,500,199 miles.

1. Name of Railway Company.	2. Name or Description of brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 30	5. Number of Miles run by Trains fitted with Continuous Brakes.
Great Eastern— <i>cont.</i> -	Westinghouse Brake— <i>cont.</i>	Aug. 3	Flexible pipe burst on compo. No. 378, at Norwich.	
		" 5	Flexible pipe burst on T.C.C. No. 666, between Thorpe and Kirby Cross.	
		" 5	Flexible pipe burst on S.C.C. No. 237, on Brundall bank.	
		" 5	Flexible pipe burst on T.C.C. No. 5, at Devonshire Street.	
		" 5	Flexible pipe burst on T.C.C. No. 573, at Reedham.	
		" 7	Flexible pipe burst on S.C.C. No. 291, at Chelmsford.	
		" 7	Flexible pipe burst on T.C.C. No. 557, between Cromer and Gunton.	
		" 9	Union nut slacked back on main pipe on engine No. 752, on Saxmundham bank.	
		" 9	Flexible pipe burst on compo. No. 254, between Marks Tey and Kelvedon.	
		" 10	Flexible pipe burst on T.C.C. No. 274, between Breydon Junction and Acle.	
		" 12	Flexible pipe burst on brake-van No. 77, between Belton and St. Olaves.	
		" 14	Flexible pipe burst on carriage truck No. 34, between Whitlingham and Brundall.	
		" 15	Flexible pipe burst on S.C.C. No. 190, at Sudbury.	
		" 15	Flexible pipe burst on T.C.C. No. 520, at St. Olaves.	
		" 15	Flexible pipe burst on compo. No. 42, at Tottenham.	
		" 17	Flexible pipe burst on T.C.C. No. 537, between Forest Gate and Junction.	
		" 17	Flexible pipe burst on brake-van No. 300, between Great Bentley and Thorington.	
		" 18	Flexible pipe burst on T.C.C. No. 959, between Whitlingham and Brundall.	
		" 19	Flexible pipe burst on T.C.C. No. 911, between Chelmsford and Ingatestone.	
		" 21	Flexible pipe burst on F.C.C. No. 100, at Temple Mills.	
		" 22	Flexible pipe burst on tender No. 0329, at Bramford.	
		" 24	Collar broke off main pipe on engine No. 790, between St. James' Street and Hall Farm Junction.	
		" 24	Flexible pipe burst on London and North- Western Railway Company's horse-box No. 252, between Brandon and Two Mile Bottom.	
		" 27	Flexible pipe burst on tender No. 115, at Lynn.	
		" 28	Flexible pipe burst on carriage truck No. 108, between Bentley and Man- ningtree.	
		" 28	Flexible pipe burst on T.C.C. No. 394, between Stowmarket and Haughley.	
		" 30	Flexible pipe burst on T.C.C. No. 349, between Kelvedon and Witham.	
		" 30	Flexible pipe burst on T.C.C. No. 100, between Waltham Cross and Cheshunt.	
		" 31	Flexible pipe burst on brake-van No. 50, at Rectory Road.	
		" 31	Flexible pipe burst on brake-van No. 112, at Brundall.	
		Sept. 3	Flexible pipe burst on T.C.C. No. 101, at Bealings.	
		" 3	Flexible pipe burst on T.C.C. No. 61, at Hatfield Peverel.	
		" 3	Flexible pipe burst on S.C.C. No. 213, at Globe Road.	
		" 4	Flexible pipe burst on T.C.C. No. 649, at Chadwell Heath.	

1. Name of Railway Company.	2. Name or Descrip- tion of brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
Great Eastern— <i>cont.</i> -	Westinghouse Brake— <i>cont.</i>	Sept. 4	Flexible pipe burst on brake-van No. 75, between Wymondham and Hethersett.	
		" 6	Flexible pipe burst on T.C.C. No. 921, at Fornsett.	
		" 7	Flexible pipe burst on S.C.C. No. 93, at Bethnal Green.	
		" 8	Flexible pipe burst on T.C.C. No. 73, on Beccles bank.	
		" 10	Flexible pipe burst on F.C.C. No. 207, between Marks Tey and Kelvedon.	
		" 10	Collar broke off main pipe on engine No. 718, between Postland and Cowbit.	
		" 13	Flexible pipe burst on S.C.C. No. 308, between Hale End and Wood Street.	
		" 13	Flexible pipe burst on S.C.C. No. 157, between Margaretting and Ingatstone.	
		" 13	Flexible pipe burst on S.C.C. No. 280, between Black bank and Chittisham.	
		" 14	Flexible pipe burst on S.C.C. No. 299, at Stamford Hill.	
		" 14	Flexible pipe burst on T.C.C. No. 598, at Rectory Road.	
		" 16	Flexible pipe burst on T.C.C. No. 886, between Dunham and Fransham.	
		" 17	Union nut slacked back on main pipe on engine No. 0331, between Lynn and Swaffham.	
		" 19	Flexible pipe burst on compo. No. 387, between Bishop's Stortford and Saw- bridgeworth.	
		" 23	Flexible pipe burst on engine No. 754, between Sawbridgeworth and Harlow.	
		" 23	Flexible pipe burst on S.C.C. No. 138, at Thames Wharf Junction.	
		" 23	Flexible pipe burst on brake-van No. 390, between Ketteringham and Wymond- ham.	
		" 23	Flexible pipe burst on compo. No. 55, between Wolferton and Dresingham.	
		" 24	Flexible pipe burst on T.C.C. No. 463, at Colchester.	
		" 24	Flexible pipe burst on brake-van No. 459, at Shadwell.	
		" 24	Flexible pipe burst on brake-van No. 466, between Rotherhithe and Deptford.	
		" 25	Flexible pipe burst on S.C.C. No. 198, at Coborn Road.	
		" 25	Flexible pipe burst on horse-box No. 220, at Postland.	
		" 26	Flexible pipe burst on T.C.C. No. 461, between Kelvedon and Marks Tey.	
		" 27	Flexible pipe burst on brake-van No. 67, between Swaffham and Narboro'.	
		Oct. 1	Flexible pipe burst on London and North- Western Railway Company's horse-box No. 95, between Stowmarket and Haughley.	
		" 3	Collar broke off main pipe on engine No. 641, between North Hall and Newport.	
		" 3	Flexible pipe burst on London and North- Western Railway Company's saloon No. 45, at Wisbech.	
		" 3	Flexible pipe burst on Great Northern Railway Company's horse-box No. 1155, at Ely Junction.	
		" 4	Flexible pipe burst on F.C.C. No. 338, at Manor Park.	
		" 4	Flexible pipe burst on tender No. 114, between Smeeth Road and Middle Drove.	
		" 6	Flexible pipe burst on S.C.C. No. 291, at Liverpool Street.	

1. Name of Railway Company.	2. Name or Descrip- tion of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
Great Eastern— <i>cont.</i> -	Westinghouse Brake— <i>cont.</i>	Oct. 8	Flexible pipe burst on compo. No. 245, between Sutton and Earith.	
		" 9	Flexible pipe burst on F.C.C. No. 376, at Sawston sidings.	
		" 11	Flexible pipe burst on S.C.C. No. 255, between Coborn Road and Globe Road.	
		" 11	Flexible pipe burst on brake-van No. 489, at Haughley.	
		" 12	Flexible pipe burst on T.C.C. No. 914, between North Elmham and Dereham.	
		" 15	Flexible pipe burst on brake-van No. 485, between Darsham and Saxmundham.	
		" 16	Flexible pipe burst on brake-van No. 161, between Littlebury and Audley End.	
		" 16	Flexible pipe burst on T.C.C. No. 875, between Helpringham and Sleaford.	
		" 18	Flexible pipe burst on London and North- Western Railway Company's compo. No. 428, between Peterboro' and Whittlesea.	
		" 19	Flexible pipe burst on horse-box No. 48, at Burnt Mill.	
		" 19	Collar broke off main pipe on engine No. 647, between Harold Wood and Romford Factory.	
		" 21	Flexible pipe burst on T.C.C. No. 42, on Brentwood bank.	
		" 22	Flexible pipe burst on horse-box No. 175, at Cambridge.	
		" 26	Flexible pipe burst on T.C.C. No. 617, at Leytonstone.	
		" 26	Flexible pipe burst on T.C.C. No. 984, at March.	
		" 29	Flexible pipe burst on fish truck No. 52, on Beccles bank.	
		Nov. 1	Flexible pipe burst on T.C.C. No. 54, between Brentwood and Shenfield.	
		" 3	Flexible pipe burst on London and North- Western Railway Company's carriage truck No. 207, between Six Mile Bottom and Fulbourne.	
		" 4	Flexible pipe burst on brake-van No. 464, between Trowse and Eaton crossing.	
		" 5	Flexible pipe burst on S.C.C. No. 225, between Long Melford and Lavenham.	
		" 6	Collar broke off main pipe on engine No. 703, between Marks Tey and Kelvedon.	
		" 6	Flexible pipe burst on brake-van No. 288, between Leytonstone and Snaresbrook.	
		" 9	Flexible pipe burst on compo. No. 333, between Wickham Market and Melton.	
		" 9	Flexible pipe burst on S.C.C. No. 439, between Liverpool Street and Bishops- gate.	
		" 14	Flexible pipe burst on compo. No. 281, between Somerleyton and Oulton Broad.	
		" 15	Flexible pipe burst on T.C.C. No. 240, at Globe Road.	
		" 18	Flexible pipe burst on fish truck No. 39, between Harling Road and Eccles Road.	
		" 18	Collar broke off main pipe on engine No. 720, between Sleaford Junction and Ruskington.	
		" 22	Flexible pipe burst on S.C.C. No. 188, at Marks Tey.	
		" 23	Flexible pipe burst on tender No. 0315, between Gunton and Cromer.	
		Dec. 3	Main pipe leaking at swan-neck joint on brake-van No. 103, at Westerfield.	
		" 10	Flexible pipe burst on S.C.C. No. 16, between White Notley and Bulford.	
		" 14	Flexible pipe burst on compo. No. 53, between Ely Junction and station.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
Great Eastern— <i>cont.</i>	Westinghouse Brake— <i>cont.</i>	Dec. 18	Flexible pipe burst on T.C.C. No. 799, between Lavenham and Cockfield.	
		" 21	Flexible pipe burst on fish-truck No. 71, at St. Olaves.	
		" 21	Flexible pipe burst on brake-van No. 316, at Eaton Crossing.	
		" 22	Flexible pipe burst on S.C.C. No. 442, at Bethnal Green.	
		" 23	Flexible pipe burst on S.C.C. No. 224, at Beccles.	
		" 23	Flexible pipe burst on T.C.C. No. 410, between Canning Town and Abbey Mills Junction.	
		" 23	Flexible pipe burst on S.C.C. No. 274, between Stratford and Maryland Point.	
		" 24	Flexible pipe burst on T.C.C. No. 914, at Newport.	
		" 25	Flexible pipe burst on T.C.C. No. 816, at Liverpool Street.	
		" 30	Flexible pipe burst on T.C.C. No. 811, between Wells and Fakenham.	
		" 31	Flexible pipe burst on T.C.C. No. 704, between Beccles and Geldeston.	
		" 31	Flexible pipe burst on compo. No. 138, at Ely.	
		" 31	Flexible pipe burst on T.C.C. No. 674, between Beccles and Geldeston.	
Great Northern	The Automatic Vacuum. (509 engines fitted. See Return No. 1, p. 12.)		1. Nil.	4,784,537 miles.
			2. <i>Failure or partial failure to act under ordinary circumstances to stop a train when required.</i>	
		Dec. 2	Brakes Nos. 733 and 789 of up train No. 177 overran platform at Palmers Green owing to ice accumulated in pipes.	
		" 12	Brakes Nos. 733 and 789 of up train No. 188 overran platform at Hadley Wood owing to pipes being blocked with ice.	
			3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i>	
		July 1	Three minutes delay at Hitchin to up train No. 392, owing to leakage in vacuum chamber pipe of engine No. 60.	
		" 2	Six minutes delay at Peterboro' to up train No. 355, owing to defective dia- phragm of brake-van No. 2393.	
		" 3	Five minutes delay at West Hallam to up train No. 20, owing to piston of engine No. 577 sticking.	
		" 3	Nine minutes delay from King's Cross to Enfield, to down train No. 336, owing to piston of engine No. 696 sticking.	
		" 4	One minute delay to up train No. 376, between Haringay and Finsbury Park, owing to piston of third-class carriage No. 209 sticking.	
		" 6	Thirty-six minutes delay at Southgate to down train No. 221, owing to piston- rod of first-class carriage No. 153 being bent.	
		" 12	Twenty-five minutes delay at York to special train No. 181, owing to brake of North-Eastern Railway brake being fast on. Cause not ascertained.	
		" 12	Eleven minutes delay from Armley to Laister Dyke, to train No. 134/5, owing to cylinder of third-class carriage No. 2349 leaking.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Train fitted with Continuous Brake.
Great Northern— <i>cont.</i>	The Automatic Vacuum — <i>cont.</i>	July 16	Six minutes delay at Hatfield to down train No. 170, owing to defective india-rubber stocking on piston-rod of third-class carriage No. 2355.	
		" 16	Five minutes delay at Westgate to train No. 176/2, owing to piston of carriage-brake No. 1987 sticking.	
		" 17	Thirteen minutes delay at Hadley Wood to down train No. 655, owing to rolling-ring of engine No. 206 getting over recess in cylinder.	
		" 22	Ten minutes delay at North Bridge to train No. 285/6, owing to small ejector-valve of engine No. 516 being fast.	
		" 28	Six minutes delay at Doncaster to up loop train No. 7, owing to scale being found in ejector of engine No. 82.	
		Aug. 3	Eighteen minutes delay from Boston to Heckington, to excursion train No. 189, owing to pipe connected with large ejector-cock of engine No. 760 collapsing.	
		" 6	Nine minutes delay at Holloway to up train No. 306, owing to piston of carriage-brakes Nos. 2173 and 2175 sticking.	
		" 17	Twenty-two minutes delay between Barnet and Hatfield to down train No. 401, owing to union nut connecting pipe to vacuum-gauge of third-class brake No. 841 being loose.	
		" 19	Three minutes delay at Three Counties to down train No. 665, owing to piston of composite No. 2306 sticking.	
		" 21	Two minutes delay at Grantham to down train No. 431, owing to piston of luggage brake-van No. 996 sticking.	
		" 26	Five minutes delay at Peterboro' to down special train No. 32, owing to piston of third-class brake No. 647 sticking.	
		" 27	Three minutes delay at Halifax to train No. 260/6, owing to piston of composite No. 311 sticking.	
		Sept. 3	Four minutes delay at Peterboro' to down loop train No. 26, owing to brake cylinder of composite No. 2304 being out of order.	
		" 7	Eleven minutes delay at Black Carr Junction to up train No. 663, owing to converting cock stay rod bolt of tender No. 595 working out.	
		" 13	Twelve minutes delay at Laister Dyke to train No. 331/6, owing to valve of small ejector of engine No. 128 sticking.	
		" 17	Seven minutes delay at Hitchin to down C.B. train No. 20, owing to ejector of engine No. 253 failing.	
		" 21	Two minutes delay at Peterboro' to up train No. 576, owing to piston of slip-brake No. 1945 sticking.	
		" 24	Eight minutes delay at Peterboro' to down train No. 450, owing to piston-rod of third-class carriage No. 1990 being bent.	
		" 25	Ten minutes delay at Tuxford to up train No. 264, owing to piston of engine No. 705 sticking.	
		" 30	Five minutes delay at Grantham to down train No. 116, owing to piston of third-class carriage No. 1976, sticking.	
		" 30	Six minutes delay at New Mill End to up Luton train No. 7, owing to scale getting under drip-valve ball of third-class carriage No. 277.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
Great Northern— <i>cont.</i>	The Automatic Vacuum— <i>cont.</i>	Oct. 1	Twenty-eight minutes delay from York to Doncaster, to up train No. 92, owing to piston-rod of brake-van No. 1261 being bent. Violent shunting.	
		" 2	Ten minutes delay at Selby to up train No. 454, owing to india-rubber washer being drawn up pipe of tender No. 543.	
		" 3	Three minutes delay at Bradford to train No. 129/6, owing to connecting-pipe of third-class carriage No. 600 giving way.	
		" 3	Six minutes delay between Barkstone and Grantham to up Sleaford train No. 8, owing to piston of carriage-brake No. 1746 sticking.	
		" 6	Ten minutes delay from Retford to King's Cross, to up train No. 146, owing to gland washers of brake No. 1263 and composite No. 1833 being hard, causing a leak.	
		" 11	Six minutes delay at Castleford to branch special train No. 65, owing to piston of carriage brake No. 200 sticking.	
		" 11	Ten minutes delay at Selby to down train No. 116, owing to piston of slip-carriage No. 659 sticking.	
		" 12	Eleven minutes delay at Peterboro' to up train No. 123, owing to bolt connecting brake shaft to piston rod of brake-van No. 45 being lost or broken.	
		" 19	One minute delay at Essendine to down train No. 170, owing to large ejector-valve of engine No. 580 sticking.	
		" 21	Fifteen minutes delay from Hitchin to Peterboro', to down train No. 324, owing to piston rod of brake-van being bent.	
		" 23	Five minutes delay at Doncaster to up train No. 744, owing to packing ring of cylinder stuffing-box of engine No. 705 leaking.	
		" 25	Five minutes delay at South Lynn to up special train No. 9, owing to valve of large ejector of engine No. 560 not closing. Particle of ash under it.	
		Nov. 1	Four minutes delay at Lincoln to down Lincoln to Retford train No. 12, owing to piston of engine No. A208 being fast.	
		" 1	Eleven minutes delay at Hatfield to up train No. 611, owing to piece of waste being in train-pipe of engine No. A235.	
		" 4	Two minutes delay at Grantham to down train No. 450, owing to piston of brake-van No. 1728 sticking.	
		" 4	Two minutes delay at Grantham to down Boston train No. 26, owing to piston of composite No. 2118 sticking.	
		" 8	Four minutes delay at Hatfield to up train No. 611, owing to piece of waste being in pipe of carriage No. 396.	
		" 14	Ten minutes delay at Holme to up train No. 354, owing to branch pipe from main to cylinder of brake-van No. 1004 breaking.	
		" 16	Four minutes delay at Boston to up loop train No. 21, owing to small stone being under large ejector-valve of engine No. 21.	
		" 21	Three minutes delay between Derby and Nottingham to up train No. 123, owing to flappet-valve of engine No. 78 giving way.	
		" 21	Five minutes delay from Sandy to Finsbury Park, to up train No. 264, owing to nut connecting train-pipe to ejector of engine No. 814 slacking back.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
Great Northern— <i>cont.</i>	The Automatic Vacuum— <i>cont.</i>	Nov. 27	Four minutes delay at Hatfield to up train No. 148, owing to connecting-pipe of third-class carriage No. 895 becoming frozen to plug.	
		" 28	Six minutes delay between Sleaford and Grantham to train No. 25/25, owing to drip-valves of engine No. 291 freezing.	
		" 28	Two minutes delay between Louth and Willoughby to up Willoughby train No. 3, owing to water in pipes of carriages freezing.	
		" 28	Two minutes delay between Essendine and Ponton to down train No. 127, owing to ice in pipes of engine No. 587.	
		" 29	One minute delay at Peterboro' to up train No. 746, owing to piston-gland and union-joint of brake-van No. 9818 and meat-van No. 15,363 leaking.	
		Dec. 2	Five minutes delay between Wandsworth Road and Battersea to up train No. 222, owing to piston of second-class carriage No. 546 sticking.	
		" 2	Three minutes delay at Horncastle to up Horncastle train No. 1, owing to water in pipes of carriages freezing.	
		" 3	Four minutes delay at Ardsley to train No. 85/1, owing to connecting-pipe of engine No. 518 freezing on plug.	
		" 3	Twelve minutes delay at Etwell to down train No. 12, owing to pipes of engine No. 527 being blocked with ice.	
		" 4	Delay at Hornsey to up train No. 198, owing to water in pipes of first-class carriage No. 153 freezing. Delay not stated.	
		" 12	Nine minutes delay at Hatfield to up train No. 218, owing to pipes of engine No. 564 being blocked with ice.	
		" 12	Three minutes delay at Bradford to train No. 123/4, owing to piston rod of engine No. 584 leaking.	
		" 12	Seventeen minutes delay at Spalding to down special train No. 39, owing to drip-valve of engine No. 58 being out of order.	
		" 14	Ten minutes delay at Laister Dyke to train No. 178/6, the pipes of carriages being partly covered with ice would not connect.	
		" 16	Four minutes delay at Keighley to train No. 102/6, owing to connecting-pipe of carriage-brake No. 391 having a hole in it.	
		" 20	Ten minutes delay at Foxton to down C.B. train No. 14, owing to neck-ring of engine No. 258 being torn and part tightly jammed between rod and gland.	
		" 24 th	Eighteen minutes delay between Carcroft and Doncaster to up train No. 201, owing to wrought-iron nipple in main pipe of third-class carriage No. 2059 breaking.	
		" 24	Sixty minutes delay from King's Cross to Finsbury Park, to down special train No. 79, owing to brake of train going on. Cause not found out.	
		" 25	Seven minutes delay at Great Horton to train No. 42/5, owing to screw of drip-valve of engine No. 658 working loose and dropping out.	
		" 26	Thirteen minutes delay at Hatfield to down Luton train No. 10, owing probably to a piece of waste being in pipe of engine No. 277.	

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Great Northern— <i>cont.</i>	The Automatic Vacuum— <i>cont.</i>	Dec. 27	Two minutes delay at Great Dalby to train No. 103/128, owing to drip-valve of engine No. 291 freezing.	
		" 28	Nine minutes delay at Holme to up train No. 264, owing to india-rubber ring round piston-rod of composite No. 1922 being worn.	
		" 30	Three minutes delay between Methley and Lofthouse of train No. 205/2, owing to piston of saloon No. 187 sticking.	
		" 31	Two minutes delay at Hatfield to up train No. 181, owing to pipe of carriage-brake No. 203 freezing on plug.	
		" 31	Four minutes delay at Stamford to up S. and E. train No. 1, owing to drip-valve of engine No. 161 being out of order. Fault of driver.	
	—	No failures reported.	—	The Simple Vacuum Brake. 8,439 miles.
Great Western	Automatic Vacuum Brake (Sanders and Bolitho's). (1,440 engines fitted. <i>See</i> Return No. 1, page 12.)		1. Nil.	8,404,290 miles.
			2. <i>Failure or partial failure to act under ordinary circumstances to stop a train when required.</i>	
		Dec. 30	Two minutes delay at Montpelier, owing to train running past platform. Brake did not take effect in consequence of air-pipe of engine 846 being choked with ice.	
			3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i>	
		July 1	Nine minutes delay at Severn Tunnel junction, owing to ejector pipe of engine 628 being choked with a piece of cotton waste.	
		" 9	Seven minutes delay at Swindon, owing to top cylinder cover breaking of third-class 13. Delay putting blank washer in.	
		Aug. 7	Three minutes delay at Slough, owing to piston band twisting and getting jammed of passenger brake-van 174, preventing the cylinder from falling.	
		" 7	Five minutes delay at Newbury, owing to union nut working off passenger brake-van 360.	
		" 9	Four minutes delay running between High Wycombe and Bourne End, owing to gland-studs breaking of compo. 447.	
		" 14	Two minutes delay at Bath, owing to leakage in air-pipe of engine "Bulkeley," running through boiler, causing water to get into the cylinders.	
		" 20	Three minutes delay at Swimbridge, owing to flexible hose-pipe of London and South-Western Company's passenger brake-van 85 being defective.	
		" 24	Nine minutes delay at Westbourne Bridge. After starting from Paddington the brake went on, owing to a bad leak at the air-pump on engine "Bulkeley," in consequence of the nuts not having been properly screwed up.	

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Great Western— <i>cont.</i>	Automatic Vacuum Brake (Sanders and Bolitho's) — <i>cont.</i>	Aug. 26	Six minutes delay at Pangbourne, owing to breakage of pipe connecting pump with main train pipe of engine 715.	
		Sept. 2	Seven minutes delay running between Salop and Church Stretton, owing to continuous pipe of carriage truck 95 being defective.	
		" 3	Two minutes delay at Trowbridge, owing to brake going on and pulling train up. Temporary leakage; cause not known. Probably a release-valve stuck up.	
		" 4	Four minutes delay at Landore. Cylinder jammed owing to gland seizing of piston-rod of milk van 543. Delay taking vehicle off train.	
		" 4	Four minutes delay at Redruth, owing to ejector check-valve of engine 2131 breaking.	
		" 8	Three minutes delay at Hereford, owing to release-valve of Caledonian Railway coach 261 sticking up.	
		" 17	Eight minutes delay at Goring, owing to union-nut of branch pipe on mail van 143 working off.	
		" 20	Five minutes delay at Landore, owing to C. I. stuffing-box of carriage truck 46 breaking, causing leakage in continuous pipe.	
		" 24	Twelve minutes delay at Pontypool Road, owing to defective switch valve on London and North-Western compo. 629.	
		" 25	Three minutes delay at Newton Abbot, owing to cylinder jamming on piston rod of horse-box 239, in consequence of rust on the rod.	
		" 26	Two minutes delay at Birmingham, owing to cylinder cover of horse-box 171 breaking.	
		" 28	Six minutes delay at Reading, owing to cylinder breaking of sleeping carriage 413.	
		" 30	Three minutes delay running between Whitland and Carmarthen junction, owing to connexions being slightly open on carriage truck 310 (split pin being missing) admitting air into main train pipe.	
		Oct. 3	Three minutes delay at Birmingham, owing to gland studs of compo. 733 being defective.	
		" 3	Two minutes delay at Tiverton, owing to release valve of passenger brake-van 396 sticking up.	
		" 4	Two minutes delay in running between Whitland and St. Clears, owing to stuffing-box of continuous pipe of carriage truck 302 breaking.	
		" 5	Ten minutes delay at Maidenhead, owing to flexible hose-pipe of compo. 372 breaking.	
		" 7	Slight delay at Kemble, owing to flexible hose-pipe of third-class 117 breaking.	
		" 14	Four minutes delay at Reading, owing to copper pipe leading to pump of engine "Eupatoria" breaking.	
		" 14	Eleven minutes delay at Teignmouth, owing to cylinder jamming of passenger brake-van 172, in consequence of defective gland.	
		" 17	Two minutes delay at Chester, owing to valve in guard's compartment of third-class 1589 sticking up.	

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Great Western— <i>cont.</i>	Automatic Va- cuum Brake (Sanders and Bolitho's) — <i>cont.</i>	Oct. 19	Two minutes delay at King's Cross, owing to release-valve of third-class 545 being dirty and would not close properly.	
		" 25	Twelve minutes delay at Swindon, owing to cylinder cover of milk van 667 breaking.	
		" 27	Ten minutes delay at Swindon, owing to ejector check-valve of engine "Alma" sticking up.	
		" 28	Seven minutes delay at Swindon, owing to leakage at joint of continuous pipe of passenger brake-van 489.	
		Nov. 1	Ten minutes delay at Southall, owing to continuous pipe of compo. 829 being defective.	
		" 4	Eight minutes delay at Didcot, owing to ejector check-valve of engine 1122 sticking up.	
		" 5	Five minutes delay at Swindon, owing to ejector check-valve of engine 1120 sticking up.	
		" 6	Five minutes delay at Truro, owing to piece of cinder getting under release-valve of mail-van 3, preventing it from closing. Delay placing van at rear of train.	
		" 7	Five minutes delay at Radley, owing to continuous pipe of tender of engine 1000 breaking.	
		" 9	Two minutes delay at Trowbridge, owing to top cylinder cover of milk van 532 breaking.	
		" 9	Two minutes delay at Frome, owing to defective cylinder gland on milk van 609.	
		" 11	Five minutes delay at Bishopsgate Street, owing to defective flexible hose-pipe of first-class 29.	
		" 11	Four minutes delay at Chippenham, owing to ejector check-valve of engine 1133 sticking up.	
		" 11	Four minutes delay running between Brislington and Pensford, owing to brake-blocks binding on wheels. Temporary leakage, exact cause of which could not be ascertained.	
		" 13	Two minutes delay at Birmingham, owing to cylinder gland of passenger brake-van 411 breaking.	
		" 16	Seven minutes delay running between Neath and Cardiff, owing to cylinder cover of third-class 1419 breaking.	
		" 19	Five minutes delay at Caerleon. London and North-Western van 170, fitted with simple vacuum brake, attached to train at Newport and pipes coupled up. Upon a vacuum being created the brake was applied to this van, and remained on until the train reached Caerleon.	
		" 23	Four minutes delay running between Knowle and Birmingham, owing to union nut of branch pipe of third-class 1594 working off.	
		" 25	Eight minutes delay at Newport, owing to defective gland of compo. 651.	
		" 30	Seven minutes delay at West London junction, owing to release-valve of compo. 310 sticking up.	
		" 30	Four minutes delay running between Par and St. Austell, owing to defective piston gland of compo. 558.	

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Great Western— <i>cont.</i>	Automatic Vacuum Brake (Sanders and Blitho's) — <i>cont.</i>	Dec. 3	Five minutes delay at Reading, owing to gland stud of milk van 522 breaking.	Fay's Hand Brake. 337,793 miles.
		" 3	Three minutes delay at Oxford, owing to release-valve of third-class 1458 sticking up.	
		" 3	Three minutes delay at Haverfordwest, owing to release-valve of poultry van 338 sticking up.	
		" 5	Five minutes delay at Pontypool Road, owing to piston gland breaking and india-rubber gland being defective of third-class 191. Delay putting coach off.	
		" 9	Six minutes delay at Gloucester, owing to brake-blocks binding on wheels. Temporary defect, cause of which could not be ascertained.	
		" 10	Two minutes delay at Oxford, owing to release valve of passenger brake-van 414 sticking up.	
		" 11	Two minutes delay at Worcester, owing to piston gland of compo. 5 breaking.	
		" 13	Six minutes delay at Steventon, owing to release-valve of cattle truck 38,219 not closing, owing to pull rod being bent.	
		" 23	Three minutes delay at Teignmouth, owing to release valve sticking up. Carriage not known.	
		" 26	Twelve minutes delay at Newport, owing to air-pipe of pump of engine 3207 breaking.	
		" 30	Six minutes delay running between Hayle and Plymouth, owing to bottom cylinder cover breaking, and union nut of branch pipe working loose on third-class 536.	
		No failures reported.	—	
Hull, Barnsley, and West Riding Junction Railway and Dock Company.	Westinghouse Automatic Brake. (21 engines fitted. See Return No. 1, page 12.)	July 27	1 and 2. Nil. 3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i> Westinghouse pipe of Hull and Barnsley third-class No. 40 burst between Willerby and Little Weighton on No. 28 up passenger train.	184,073 miles.
		Sept. 12	Westinghouse donkey of No. 36 engine failed on 8.40 p.m. down passenger train.	
		Oct. 9	Westinghouse donkey of No. 41 engine failed on 4.50 p.m. down passenger train.	
		Nov. 18	Westinghouse donkey of No. 3 engine failed on No. 28 down passenger train.	
		Dec. 2	Westinghouse triple-valve of No. 1 engine frozen up on No. 16 down passenger train.	
		" 26	Westinghouse hose of Midland Railway horse-box No. 336 burst near Upton, on No. 24 down passenger train.	
		No failures reported.	—	Automatic Vacuum Brake. 1,414 miles.
Isle of Wight Central.	—	No failures reported.	—	Clark's Chain Brake. 31,704 miles.

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Lancashire and York- shire.	Automatic Va- cuum Brake. (657 engines fitted. See Return No. 1, page 12.)		1 and 2. Nil.	4,978,770 miles.
			3. <i>Delay in the working of trains in con- sequence of defects in or improper action of the brakes.</i>	
		July 4	The 10.30 p.m. Manchester to Horwich was detained at Clifton Junction through the piston temporarily sticking under No. 365 composite. Cause not ascer- tained.	
		" 9	The 12.40 p.m. (Victoria) Manchester to Blackpool, was delayed 9 minutes on the journey unable to obtain more than 12 ins. of vacuum, owing to the vacuum pipe nuts under the foot-plate of engine No. 902 slacking back.	
		" 9	The 11.40 a.m. Liverpool to Wigan was delayed 5 minutes at Pimbo Lane, owing to the brake going on auto- matically, caused by the miniature sack drawing air on engine No. 645.	
		" 16	The 2.40 p.m. York to Manchester was delayed 7 minutes at North Dean, owing to the vacuum pipe under com- bined chamber giving way on engine No. 994.	
		" 26	The 6.1 a.m. Sowerby Bridge to Leeds was delayed 6 minutes at Low Moor, unable to maintain vacuum owing to the clappet-valve washer giving way on engine No. 894.	
		" 27	The 9.25 a.m. Hellifield to Manchester was delayed 5 minutes at Langho, owing to the tender vacuum piston of engine No. 814 sticking. Caused by india-rubber rings getting over piston head.	
		" 27	The 1.25 p.m. (Victoria) Manchester to Bolton lost 5 minutes on the journey unable to maintain vacuum, owing to the clappet-valve washer on engine No. 639 giving way.	
		" 30	The 5.0 a.m. Manchester to York was detained at Rochdale through a defective ball-valve diaphragm under composite No. 324. Failure of machinery.	
		Aug. 6	The 5.15 p.m. Manchester to York was delayed 5 minutes at Hebden Bridge, owing to the brake going on auto- matically. Caused by the vacuum air- pipe under foot-plate breaking on engine No. 995.	
		Sept. 3	The 7.50 p.m. Wakefield to Goole lost 15 minutes on the journey, the brake going on automatically owing to the leakage of a miniature sack on engine No. 611. Failure of material.	
		" 17	The 2.20 p.m. Liverpool to Rochdale was delayed 4 minutes at Simonswood by the brake going on automatically, owing to the pipe of the combination ejector breaking on engine No. 879.	
		Oct. 3	The 6.30 p.m. Liverpool to Victoria was delayed 4 minutes at Salford unable to obtain vacuum, owing to the vacuum owing to the vacuum piston packing ring leaking on engine No. 456. Failure of material.	
		" 9	The 6.5 p.m. Manchester to Southport was delayed 6 minutes at Hoscarr Moss unable to maintain sufficient vacuum, owing to the vacuum pipe under the foot-plate of engine No. 152 leaking.	

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Lancashire and York- shire— <i>cont.</i>	Automatic Va- cuum Brake — <i>cont.</i>	Nov. 11	The 9.15 a.m. Burnley to Liverpool was delayed 10 minutes at Rishton, owing to the vacuum piston sticking on engine No. 664.	
		" 17	The 9.15 a.m. Liverpool to Southport was delayed 5 minutes at Ainsdale, unable to get sufficient vacuum owing to some scale getting into the ejector of engine No. 86.	
		" 23	The 5.22 a.m. Crigglestone to Darton was detained at the former station, owing to the piston sticking under third-class carriage No. 1702. Cause not ascertained.	
		" 26	The 8.47 a.m. Wigan to Rochdale was delayed 17 minutes on the journey, owing to the rolling ring in vacuum cylinder of engine No. 688 getting twisted.	
		" 27	The 9.7 a.m. Todmorden to Preston was delayed 5 minutes at Preston Junction, unable to release the brake owing to a piece of india-rubber getting in the vacuum pipe of engine No. 892.	
		" 28	The 11.25 a.m. Victoria to Blackpool lost 10 minutes up to Bolton, owing to the tender vacuum piston sticking on engine No. 1002. Caused by frost.	
		Dec. 7	The 7.35 a.m. Dewsbury to Bradford was delayed 9 minutes on the journey, owing to the copper vacuum pipe for gauge breaking on engine No. 333.	
		" 14	The 12.20 p.m. Preston to Accrington was delayed 10 minutes at Preston Junction owing to the tender vacuum piston sticking on engine No. 650.	
		" 14	The 6.0 a.m. Leeds to Victoria was delayed 17 minutes at Littleboro', owing to the vacuum piston sticking on engine No. 888.	
		" 18	The 5.5 p.m. Liverpool to Preston was detained at Burscough North Junction and Midge Hall through the loose rocking shaft under third-class carriage and van No. 1066 being rusty and requiring cleaning. Neglect of servants.	
		" 30	The 12.12 p.m. Barnsley to Wakefield was delayed 25 minutes at Darton, owing to vacuum piston sticking of engine No. 42. The rolling rings had got out of place.	
Liskeard and Caradon	—	No failures reported.	—	Walter Parker Smith's Auto-matic Brake. 4,695 miles.
London and North- Western.	Automatic Va- cuum Brake. (1,096 engines fitted. See Return No. 1, p. 14.)		1 Nil. 2. <i>Failure or partial failure to act under ordinary circumstances to stop a train when required.</i>	3,261,551 miles.
		Sept. 7	The 11.0 a.m. Leeds to Liverpool overran the platform at Batley owing to engine being unable to maintain vacuum in consequence of the hose-pipe at the end of the engine-tender being partly corroded away. Failure of material due to ordinary wear and tear.	
		Nov. 27	The 4.25 p.m. Carlisle to London overshot the platform at Nuneaton owing to the brake failing to act. This was due to an accumulation of ice in the vacuum pipe on engine.	

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London and North Western— <i>cont.</i>	Automatic Vacuum Brake— <i>cont.</i>	Nov. 28	The 8.20 p.m. London to Holyhead over-shot the platform at Rugby in consequence of the brake failing to act. Due to vacuum pipe between engine and tender being blocked with ice.	
			<i>3. Delay in the working of trains in consequence of defects in or improper action of the brakes.</i>	
		July 1	The 12.4 a.m. Crewe to Holyhead (Pier) was delayed at Holyhead station owing to difficulty in releasing the brake. Cause could not be ascertained.	
		" 2	The 8.30 p.m. Leeds to Manchester was delayed in running between Longwood and Slaithwaite, owing to the brake blocks on rear van rubbing. Cause could not be ascertained.	
		" 6	The 12.10 a.m. Holyhead to London was delayed in running between Bangor and Chester, owing to engine not maintaining requisite vacuum. Neglect.	
		" 16	The 8.0 p.m. London to Carlisle was delayed at Standish, owing to engine being unable to maintain necessary vacuum. Cause could not be ascertained.	
		" 20	The 12.23 p.m. Carlisle to London was delayed at Carnforth, owing to failure of the brake apparatus on the engine, thus causing a leakage, (The small ejector pipe on the engine blew out.)	
		" 22	The 8.0 p.m. London to Carlisle was delayed at Milnthorpe owing to difficulty in maintaining the requisite vacuum. Due to some grit having got into the vacuum pipes on the engine.	
		" 24	The 12.5 p.m. Manchester to Crewe lost time in running up to Alderley, owing to a difficulty in maintaining necessary amount of vacuum. Unable to ascertain the cause.	
		Aug. 1	The 2.18 p.m. Crewe to Holyhead started late, owing to the vacuum clack valve on the engine breaking when the vacuum was being created. Failure of material on engine.	
		" 1	The 4.30 p.m. Carlisle to London was delayed in running between Carlisle and Shap Summit, owing to difficulty in maintaining vacuum. Cause could not be ascertained.	
		" 2	The 7.50 a.m. train, Holyhead to Crewe, was stopped by signals outside Crewe, and was further delayed owing to a difficulty in releasing the brakes. Unable to ascertain the cause.	
		" 5	The 10.0 a.m. from London to Carlisle was delayed at Preston, owing to engine being unable to release the brakes. This was in consequence of the packing blowing out of the small ejector steam pipe nut, and also owing to the key coming out of the right injector on the engine. Failure of material on engine.	
		" 5	The 12.0 noon train, Liverpool to London, was delayed between Liverpool and Runcorn, owing to difficulty in maintaining vacuum. Unable to ascertain cause.	

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London and North-Western— <i>cont.</i>	Automatic Vacuum Brake— <i>cont.</i>	Aug. 7	The 8.20 p.m. London to Holyhead was delayed on the Euston incline, owing to difficulty in maintaining vacuum. Due to the packing under the small ejector steam pipe on the engine coming out and getting in the nozzle of the steam pipe. Failure of material on engine.	
		„ 10	The 10.10 a.m. London to Crewe was brought to a stand just outside Nuneaton station, owing to brakes going on. Engine was unable to release the brakes. This was found to be due to a package pressing against the brake spindle in the guard's van, thus applying the brakes. Carelessness on part of staff.	
		„ 14	The 12.0 night train, London to Crewe, was brought to a stand on leaving Birmingham, owing to brake on a parcel van (No. 9) not being properly released, caused by the "cut-off" valve on the van having given way. Failure of material.	
		„ 14	The 7.5 p.m. Manchester to Chester was delayed at Halton, owing to difficulty in releasing brakes. Due to spindle of the regulating valve on a L. and N.W. carriage (No. 646) by some means having got bent, thus causing a leakage.	
		„ 19	The 12.13 a.m. train, Crewe to London, was delayed at Stafford in consequence of difficulty in maintaining the requisite vacuum. Cause could not be ascertained.	
		„ 20	The 10.55 p.m. Manchester to Crewe was stopped at Edgeley Junction, near Stockport, owing to necessary vacuum to keep brakes from rubbing not being maintained. Due to the packing in the small ejector on the engine blowing out.	
		„ 21	The 7.45 a.m. Crewe to London had a late start from Rugby, consequent upon the engine being unable to create the required vacuum. This was owing to the stuffing-box of a carriage (No. 977) being out of order.	
		„ 26	The 9.5 p.m. Crewe to Birkenhead was stopped out of course at Beeston Castle, in consequence of the vacuum not being maintained. This was due to a leakage caused by the clip of the end plug on a composite carriage (No. 617) working loose from some cause which was not ascertainable.	
		„ 26	The 8.40 a.m. Carlisle to London was stopped out of course at Lowgill, owing to brakes on two N. E. R. vehicles in rear of train rubbing. The vehicles were attached at Tebay, and the staff there neglected to place the reversible levers in the correct position.	
		„ 28	The 3.35 p.m. Birmingham to Crewe had a late start owing to failure of the brake on one of the carriages (No. 111). The cut-off valve spindle on the vehicle failed and broke.	
		Sept. 7	The 1.51 a.m. Crewe to Holyhead had a late start owing to difficulty in raising vacuum. This was due to a bicycle in one of the guards' vans having fallen on to the brake spindle and opening the valve, thereby admitting air into the main train pipe.	

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London and North- Western— <i>cont.</i>	Automatic Vacuum Brake. — <i>cont.</i>	Sept. 12	The 4.30 p.m. Carlisle to Preston was delayed in running, owing to difficulty in maintaining vacuum, and train stopped out of course at Southwaite. Cause could not be ascertained.	
		" 17	The 3.22 p.m. Preston to Carlisle was delayed in running, owing to engine not being able to maintain vacuum, and train was stopped out of course at Penrith. Failure due to the joint of the air-valve on the engine breaking. Failure of material on engine.	
		" 17	The 8.0 p.m. London to Carlisle was delayed at Crewe, owing to failure of brake apparatus on the engine. Neglect of a fitter, who took away from the engine the union pipe of the small ejector.	
		" 27	The 12.23 p.m. Carlisle to Crewe was stopped specially at Farington, owing to difficulty in maintaining necessary vacuum. Cause of failure could not be ascertained.	
		" 30	The 8.41 p.m. Carlisle to London was delayed at Carnforth, owing to brake blocks on West Coast Joint Stock Post Office tender No. 198 rubbing. This was due to a leakage, owing to the spindle of the cut-off valve on the vehicle having given way. Failure of material.	
		Oct. 8	The 12.5 a.m. Carlisle to London was delayed at Upperley Junction, Carlisle, owing to the wheels on Caledonian Railway Co.'s van No. 177 skidding. This was due to the reservoir gauge on the vehicle being out of order. Failure of material.	
		" 15	The 12.10 a.m. Holyhead to London was delayed at Bangor owing to difficulty in maintaining the vacuum in consequence of a leakage in the pipes on two of the vehicles, due to some grit getting on the seating of the regulating valves. (Vehicles—carriage No. 137 and parcel van No. 71.) The train was also delayed at Aber owing to the brakes on the front van not having been properly released at Bangor. Neglect of staff.	
		" 16	The 3.22 p.m. Preston to Carlisle started late owing to engine being unable to maintain the requisite vacuum. Due to the packing blowing out of the expansion gland on the engine.	
		" 19	The 5.10 p.m. Crewe to Carlisle started late owing to engine being unable to create necessary vacuum. Due to defective pipe under footplate between engine and tender. Failure of material.	
		" 24	The 5.30 p.m. Euston to Liverpool left Euston late owing to engine being unable to create the requisite vacuum. Due to a defect in the drip-valve on engine, and also in the hose connexion between the engine and tender. Failure of material.	
		" 26	The 8.10 a.m. train, Manchester to Stockport, had a late start owing to engine being unable to create necessary vacuum. This was due to the hose-pipe behind the engine having collapsed. Failure of material.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
London and North- Western— <i>cont.</i>	Automatic Vacuum Brake — <i>cont.</i>	Nov. 4	The 11.10 p.m. train, Chester to Holyhead, was stopped specially at Abergele owing to the brake blocks rubbing on carriage No. 79. Due to the "cut-off" valve spindle on the vehicle having given way. Failure of material.	
		" 8	The 7.35 a.m. train, Leeds to Huddersfield, was delayed at Wortley and Farnley owing to break on carriage No. 1019 having failed in consequence of the spindle of the "cut-off" valve having given way. Failure of material.	
		" 8	The 12.23 p.m. Carlisle to London was stopped out of course at Euxton in consequence of the brake blocks rubbing on West Coast Joint Stock brake carriage No. 411. This was caused by the reversible lever on the carriage having been left in wrong position at Preston. Neglect of brake examiner.	
		" 13	The 11.41 p.m. Carlisle to London was delayed in running owing to difficulty in maintaining necessary vacuum. Cause could not be ascertained.	
		" 19	The 12.0 noon train, Liverpool to London, was delayed in running after leaving Tamworth owing to difficulty in maintaining vacuum. This was due to a leakage on composite carriage No. 522, caused by a small piece of cinder having got on to the seating of the regulating valve on the vehicle.	
		" 20	The 12.50 p.m. Preston to Carlisle was delayed at Brock owing to failure of the brake on carriage No. 764. This was caused by a cinder having got on to the seating of the regulating valve.	
		" 21	The 8.0 p.m. London to Carlisle was stopped just after leaving Wigan owing to the brake blocks rubbing on West Coast Joint Stock composite carriage No. 116. Failure due to a defective valve on the coach. Failure of material.	
		" 21	The 6.0 p.m. Stafford to Nuneaton was stopped just after leaving Stafford owing to the brake on guard's van No. 50 having failed and blocks rubbing. Failure due to the regulating valve on the van from some cause sticking.	
		" 23	The 3.22 p.m. Shrewsbury to Crewe was delayed in starting owing to engine not being able to release the brakes, in consequence of the large ejector clack on the engine having been broken. Failure of material.	
		" 25	The 9.25 p.m. (postal) train, Carlisle to London, was stopped out of course at Plumpton owing to difficulty in maintaining requisite vacuum. Cause could not be ascertained.	
		" 19	The 6.30 p.m. London to Holyhead was delayed in running up to Willesden owing to difficulty in maintaining necessary vacuum. This was due to a leakage caused by a cinder having got into the seating of the regulating valve on parcels van No. 22.	
		" 26	The 3.55 p.m. Stafford to London was delayed in running after leaving Rugby owing to engine not maintaining vacuum, and train had to be stopped specially at Kilsley and Crick. Due to a joint of the vacuum clack box on the engine breaking. Failure of material.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c., under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
London and North-Western— <i>cont.</i>	Automatic Vacuum Brake <i>cont.</i>	Nov. 26	The 8.41 p.m. Carlisle to London, after leaving Warrington, was stopped at Norton level crossing owing to the brake blocks on the rear coach working on. This was in consequence of a porter at Warrington neglecting to see that the pipe was properly placed on the stopper. Neglect of staff.	
		" 27	The 12.23 p.m. Carlisle to London was delayed at Shap Summit owing to difficulty in maintaining vacuum. On examination of the engine a washer was found in the pipe under the valve, and this was the cause of the failure.	
		" 27	The 1.15 p.m. London to Crewe was delayed at Stafford owing to failure of the engine to work the brake. This was due to an accumulation of ice in the vacuum pipe on the engine.	
		" 30	The 6.30 p.m. London to Holyhead was delayed in running between Euston and Blisworth owing to difficulty in maintaining vacuum. Due to a joint of the brake apparatus on the engine giving way. Failure of material.	
		" 30	The 10.30 a.m. London to Carlisle was delayed in starting owing to engine being unable to create the necessary vacuum. Failure due to a sponge cloth having got into the hose-pipe on composite brake carriage No. 807.	
		Dec. 1	The 2.27 a.m. Chester to Liverpool, owing to engine being unable to work the brake, started late from Chester. Cause could not be ascertained.	
		" 2	When approaching Crewe, the driver of the 8.0 p.m. train from London to Carlisle tested the brakes, which acted properly, but he was unable to release them. This was due to ice having formed in the train pipes. The frost was very severe at the time.	
		" 2	The 4.0 p.m. London to Manchester had a late start owing to engine being unable to create the necessary vacuum. This was caused by a sponge cloth having got into the vacuum pipe on the engine.	
		" 2	The 10.0 p.m. London to Crewe was stopped at Banbury Lane, near Blisworth, owing to engine being unable to maintain necessary vacuum. Due to an accumulation of ice in the vacuum pipe on the engine.	
		" 3	The 11.55 p.m. Holyhead to London was delayed at Rugby in consequence of the engine being unable to create the necessary vacuum. Brake apparatus frozen.	
		" 3	The 8.5 p.m. Holyhead to Crewe was delayed at Chester owing to engine being unable to create the requisite vacuum. This was owing to the brake on van No. 245 being frozen up with water in the pipes.	
		" 3	The 1.5 a.m. Crewe to London was delayed in running owing to difficulty in maintaining vacuum. Cause could not be ascertained.	
		" 4	The 5.40 p.m. Chester to Birkenhead had a late start owing to partial failure of the brake on Great Western Co.'s composite carriage No. 21. Cause could not be ascertained.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the cause of Failure, &c. under the three headings given on page 30.	5. Number of Miles run by Trains fitted with Continuous Brakes.
London and North- Western— <i>cont.</i>	Automatic Vacuum Brake — <i>cont.</i>	Dec. 5	The 10.55 a.m. Bangor to Chester started late owing to engine being unable to create the requisite vacuum. Due to hose-pipe under engine tender being defective. Failure of material.	
		" 7	The driver of the 9.25 p.m. (postal) train, Carlisle to London, tested the brakes on approaching Preston; they acted properly, but could not be released. This was due to the vacuum brake under the engine tender and the front vehicle being frozen. There was a severe frost at the time. Train delayed at Preston.	
		" 7	The 3.35 p.m. Preston to Carlisle was delayed in running owing to difficulty in maintaining the required amount of vacuum. Cause could not be ascertained.	
		" 12	The 4.15 p.m. London to Bletchley was delayed in running in consequence of the necessary vacuum not being maintained. Due to vacuum pipe on engine giving way. Failure of material.	
		" 12	The 10.55 a.m. Stafford to Rugby was delayed in running owing to vacuum not being maintained, causing blocks to rub on the wheels of some of the vehicles. This was due to the hose-pipes between L. & S.W.R. carriages Nos. 556 and 573 being blocked with ice.	
		" 12	The 2.0 p.m. London to Manchester was stopped specially at Chelford owing to necessary vacuum not being maintained by the engine. This was due to neglect on the part of the driver.	
		" 14	The 7.45 a.m. Macclesfield to Manchester started late owing to engine being unable to create the requisite vacuum. Due to the vacuum pipe on brake-van No. 75 being blocked with ice.	
		" 16	The 3.40 p.m. Chester to Liverpool was delayed at Runcorn and Allerton owing to difficulty in releasing the brakes, caused by the spindle of the vacuum clack on engine being bent. Failure of material.	
		" 18	The 4.25 p.m. Carlisle to Crewe stopped specially at Farington owing to the blocks on Caledonian Railway Co.'s brake-van No. 183 rubbing. Due to the stuffing-box of the van giving way. Failure of material.	
		" 21	The 12.12 p.m. Tebay to Oxenholme was stopped specially at Grayrigg owing to difficulty in maintaining the necessary vacuum. Cause could not be ascertained.	
		" 28	The 9.25 p.m. (postal) Carlisle to London was stopped at Carnforth to enable the engine to take water. When required to start away the engine could not release the brakes. Due to an accumulation of ice in the vacuum pipe on the engine.	
		" 30	The 4.30 p.m. Wolverhampton to Stafford was delayed at Penkridge owing to engine being unable to release the brakes. The failure is supposed to have been due to some one having crossed between the vehicles and kicked the pipes open.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
London and North- Western --cont.	Vacuum Brake (53* engines fitted. See Return No.1, page 14.)		1. Nil.	5,778,274 miles.
			2. <i>Failure or partial failure to act under ordinary circumstances to stop a train when required.</i>	
		Aug. 14	The 4.20 p.m. Manchester (Exchange) to Leeds overshot the platform at Golcar, owing to the vacuum brake failing to act in consequence of the vacuum hose-pipe on carriage-truck No. 636 bursting. Failure of ma- terial.	
		" 19	The 6.40 a.m. Bangor to Liverpool over- shot the platform at Penmaenmawr, owing to the vacuum brake failing to act. This was due to someone having crossed between the vehicles at a pre- vious station and knocked against the vacuum pipes, causing them to be par- tially disconnected.	
		" 22	The 9.0 p.m. excursion train, Shrewsbury to Stafford, overran the platform at Wellington, owing to the vacuum brake not acting. This was due to one of the vacuum pipes being partly uncoupled, and it is supposed that this had been done at a previous station by someone knocking against the hose-pipes when crossing between.	
		" 26	The 8.30 a.m. train, Manchester to Liver- pool, overshot the platform at Newton- le-Willows, owing to the vacuum brake failing to act. This appears to have been due to someone having crossed between the carriages at Manchester and knocked against the hose-pipes, causing them to become uncoupled.	
		Dec. 3	The 10.10 a.m. train, Manchester to Kenyon, overshot the platform at Tyldesley, owing to failure of the brake to act. This was due to the vacuum pipe on the engine breaking. Failure of material.	
		" 7	The 7.30 p.m. Wigan to Manchester overran the platform at Weaste in con- sequence of the brake failing to act. This was due to a disarrangement of the vacuum pipes connecting two car- riages, and it is supposed this was done at Eccles by a porter having crossed between the two vehicles and knocked against the hose-pipes.	
			3. <i>Delay in the working of trains in con- sequence of defects in or improper action of the brakes.</i>	
		July 3	The 4.30 p.m. Carlisle to Preston was delayed in running, owing to difficulty in maintaining necessary vacuum. Cause could not be ascertained.	
		" 8	The 10.56 a.m. Preston to Carlisle was delayed in running, owing to the brake blocks on van No. 195 rubbing. Due to a piece of cinder having got on to the seating of the regulating valve on van.	
		" 8	The 9.30 a.m. Buxton to Manchester had a late start, owing to brakes going on and difficulty in releasing them. Cause could not be ascertained.	

* Exclusive of engines also fitted with automatic vacuum brakes.

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
London and North-Western— <i>cont.</i>	Vacuum Brake— <i>cont.</i>	July 17	The 7.10 a.m. Manchester to Liverpool was delayed at Ordsall Lane, owing to the brakes on two carriages being on. This was due to the reversible levers on the two vehicles being left in the wrong position. Neglect of staff.	
		Aug. 5	The 1.48 p.m. Chester to Bangor was stopped at Paper Mill siding, near Flint, owing to the brakes on two carriages going on. Cause could not be ascertained.	
		" 17	The 3.0 p.m. Holyhead to London was delayed in running between Rugby and Bletchley, owing to the brake blocks rubbing on the wheels. Due to failure of the needle of the engine gauge to maintain its usual position, thus deceiving the driver, and he maintained a stronger vacuum than was necessary. Failure of material on engine.	
		" 19	The 3.0 p.m. train, London to Rugby, was delayed at Bletchley, owing to the brake blocks on the front van rubbing. Due to the reversing links of the van (No. 657) being out of order.	
		" 19	The 8.35 a.m. Macclesfield to Manchester was delayed at Prestbury, owing to failure of driver to work the vacuum brake. Due to mismanagement on the part of the driver.	
		" 27	The 3.0 p.m. train, Manchester to Liverpool, started late, owing to engine being unable to maintain necessary vacuum in consequence of the india-rubber washer getting under the vacuum clack on the engine.	
		" 31	The 9.50 a.m. Crewe to Stafford started late, owing to engine being unable to create necessary vacuum. Due to a leakage caused by the diaphragm of balance valve of guard's van being out of order. Failure of material.	
		Sept. 7	The 12.49 a.m. Crewe to Carlisle was delayed in starting, owing to difficulty in creating the requisite vacuum. This was caused by the release valve at the back of the engine cab sticking.	
		" 21	The 10.0 a.m. Chester to Holyhead was delayed at Mold Junction, owing to the brake blocks on one of the carriages (No. 40) rubbing. The vehicle in question was fitted with the automatic vacuum brake only, and the carriage examiner at Chester omitted to properly destroy all the vacuum. Neglect of staff.	
		Oct. 8	The 4.5 a.m. Craven Arms to Swansea was delayed at Llanwrda, owing to difficulty in releasing the brake on guard's van No. 187. Cause could not be ascertained.	
		" 8	The 7.20 p.m. Leeds to Liverpool was delayed at Howley Park siding, near Morley, owing to the brake blocks rubbing on one of the carriages (No. 1587). Brake examiner at Leeds omitted to release the Westinghouse brake on the coach. Neglect of staff.	
		Nov. 1	The 10.45 a.m. Rugby to London was delayed at Northampton, owing to the brake blocks on stores van No. 2 rubbing, owing to brake not having been properly released. Neglect of brake examiner.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
London and North- Western-- <i>cont.</i>	Vacuum Brake — <i>cont.</i>	Nov. 16	The 6.35 p.m. Bolton to Manchester had a late start. Engine unable to create the vacuum, owing to the pipe on the engine having burst. Failure of material.	912,198 miles.
		" 27	The 10.0 p.m. London to Crewe was delayed at Rugby, owing to a pipe on the engine which was being attached splitting, supposed owing to the pipe being frozen.	
		" 27	The 7.0 p.m. Manchester to Leeds was delayed in running between Staley-bridge and Huddersfield, owing to failure of brake on brake carriage No. 43. Due to a defective balance valve washer on the vehicle. Failure of material.	
		" 28	The 1.15 a.m. Carlisle to Crewe was delayed at Upperby Junction, Carlisle, owing to difficulty in keeping brakes off brake carriage No. 65 and the rear van. Cause could not be ascertained.	
		" 28	The 7.7 a.m. Wolverhampton to Birmingham was delayed at Oldbury, owing to the brake gear on composite carriage No. 616 being defective. Due to ordinary wear and tear. Failure of material.	
	Clarke and Webb's Brake.		1 and 2. Nil.	
			3. <i>Delay in the working of trains in consequence of defects or of improper action of the brakes.</i>	
		July 1	The 5.10 p.m. train, Birkenhead to West Kirby, was delayed in running after leaving Hooton in consequence of the friction gear on brake carriage No. 923 being out of order. Neglect of staff.	
		Oct. 18	The 10.23 a.m. Huddersfield to Kirkburton was delayed at Kirkheaton, owing to the chain in front portion of the train breaking when brakes were applied. Failure of material.	
		No failures reported.	—	
London and South- Western.	Vacuum Auto- matic Brake. (496 engines fitted. See Return No. 1, page 16.)		1 and 2. Nil.	4,678,492 miles.
			3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i>	
		July 9	Twenty-one minutes at Byfleet Junction and Woking. Brake adjusted too tightly on No. 615 passenger brake-van.	
		" 17	Eleven minutes at Okehampton. Compensating links worked out of position of No. 343 bogie composite carriage.	
		" 20	Two minutes after leaving Lannceston. Connexion pipe on No. 146 third class carriage broken.	
		" 24	Two minutes at Alton. Pulling-rod binding hard on tumbler lever of No. 64 third class carriage.	
		" 25	Nine minutes between Waterloo and Southampton. Rust and dirt in casing, and cylinder binding on casing of No. 150 fruit van.	

1. Name of Railway Company.	2. Name or Description of brake which failed or caused delay.	2. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
London and South- Western— <i>cont.</i>	Vacuum Auto- matic Brake — <i>cont.</i>	Aug. 5	Seven minutes between Chertsey and Weybridge. Train pipe joint leaking of "Osprey" engine.	
		" 17	Three minutes at Ludgate Hill. Drip ball valve cup of No. 493 engine fell down.	
		" 17	Four minutes at Eastleigh. Dirt and grease in front drain valve of No. 179 engine.	
		" 20	Five minutes at Richmond. Brake gear fell down of No. 779 third class carriage.	
		" 21	Two minutes at Yeoford. Brake shaft casting broken of No. 408 passenger brake-van.	
		" 29	Three minutes at Wimbledon. Defective diaphragm in main valve of No. 81 passenger brake-van.	
		Sept. 2	Six minutes at Woking. Pulling-rod binding hard on safety hook of No. 399 passenger brake-van.	
		" 9	Seven minutes at Okehampton. Portion of brake gear jammed of No. 342 bogie composite carriage.	
		" 10	Six minutes at Vauxhall. Brake gear fell down of No. 420 passenger brake-van.	
		" 21	Seven minutes near Addlestone. India-rubber ring missing from vacuum pipe of No. 345 bogie composite carriage.	
		" 28	Seven minutes between Leatherhead and Waterloo. Washer displaced on clapper valve of No. 61 engine.	
		Oct. 14	One minute near Chiswick. Defective valve on No. 137 passenger brake-van.	
		" 16	Seven minutes in Houniton Tunnel. Drip valve worked out of main train pipe of No. 162 engine.	
		Nov. 7	Four minutes at Eastleigh. Washer missing from vacuum pipe of No. 168 passenger brake-van.	
		" 18	Three minutes at Woking. Vacuum pipe to steam brake broke off in the nut of No. 453 engine.	
		" 20	Two minutes near Tulse Hill. Main vacuum pipe broke of No. 298 engine.	
		Dec. 3	Twelve minutes between Waterloo and Portsmouth. Water in cylinder of No. 365 passenger brake-van.	
		" 5	Four minutes at Eastleigh. Washer missing from vacuum pipe of No. 40 third class carriage.	
		" 30	Five minutes between Reading and Staines. Ice in cylinder of No. 519 third class carriage.	
London, Brighton, and South Coast.	Westinghouse Continuous Automatic Air Brake. (348 engines fitted. See Return No. 1, page 16.)		1 and 2. Nil.	3,758,058 miles.
			3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i>	
		July 2	8.30 a.m. Hastings to London delayed 2 minutes between Purley and South Croydon. Copper pipe leading from main reservoir to brake regulator on engine broke at the collar (reservoir end).	
		" 9	6.45 a.m. London Bridge to Portsmouth delayed 3 minutes between Bermondsey and Sutton. Copper pipe of engine air pressure gauge leading to train pipe broke in the collar.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
London, Brighton, and South Coast— <i>cont.</i>	Westinghouse Continuous Automatic Air Brake— <i>cont.</i>	July 24	6.15 p.m. Tunbridge Wells to Three Bridges delayed 3 minutes at Groom- bridge Junction. Hose coupling on No. 161 second class carriage burst.	
		Aug. 12	10.15 a.m. Brighton to Victoria delayed 5 minutes between Horley and Earls- wood Common. Hose coupling on No. 67 carriage truck burst.	
		" 28	4.40 p.m. Eastbourne to Victoria delayed 6 minutes between Lewes and Cooks- bridge. Hose coupling on No. 24 horse box burst.	
		Sept. 23	5.18 p.m. London to Wimbledon delayed 2 minutes at Tulse Hill. Copper pipe between donkey pump and main reservoir on engine No. 298 broke in the collar (pump end).	
		Oct. 7	8.0 p.m. London Bridge to Newhaven delayed 3 minutes between Sydenham and Penge. Steel branch pipe leading to triple valve on No. 1502 grande vitesse van broke in the collar.	
		" 19	10.35 p.m. Brighton to London Bridge delayed 8 minutes between Spa Road and No. 4 signals. Hose coupling on No. 651 third class carriage burst.	
		Dec. 18	11.0 a.m. London to Brighton delayed 2 minutes at Earlswood Common. Hose coupling on No. 1012 third class carriage burst.	
		" 21	11.45 a.m. Hastings to London delayed 3 minutes at Red Hill. Hose coupling on No. 1222 Great Northern Railway Company's horse box burst.	
		" 31	4.53 p.m. London Bridge to Victoria delayed 5 minutes at Grosvenor Road. Donkey pump reversing piston ring broken.	
London, Chatham, and Dover.	Westinghouse Continuous Automatic Air Brake. (81 engines fitted. See Return No. 1, page 16.)		1. Nil.	600,012 miles.
			2. <i>Failure or partial failure to act under ordinary circumstances to stop a train when required.</i>	
		July 10	7.55 a.m. Victoria to Moorgate Street. Overshot platform at Camberwell four coach lengths. Fault of driver in keeping pressure too low.	
		" 20	4.50 p.m. Herne Hill to Bickley. Over- shot platform at Sydenham Hill two coach lengths. Error of judgment on part of driver.	
		" 29	7.52 a.m. Herne Hill to Holborn. Over- shot stop signal at danger at Walworth Road two coach lengths, the pipe not being coupled up between saloon next to the engine and remaining portion of train. Fault of coupler.	
		Aug. 6	2.22 p.m. Moorgate Street to Crystal Palace. Overshot platform at Alders- gate Street a coach length. Error of judgment on part of the driver.	
		Oct. 8	3.20 p.m. up Dover boat. Overshot plat- form at Canterbury the train's length. Cannot say cause. Driver applied brake in usual manner, but it did not take effect. One minute delay.	
		Nov. 13	4.0 p.m. Barnet to Victoria. Overshot platform at King's Cross (Metropolitan Railway) horse box and three carriage lengths, through shunter not opening the cock on horse box at end next to train. Attached at King's Cross, Great Northern Railway.	

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London, Chatham, and Dover— <i>cont.</i>	Westinghouse Continuous Automatic Air Brake— <i>cont.</i>	Nov. 29	5.36 p.m. Victoria to Moorgate Street. Overshot platform at Battersea Park station one coach length. Error of assisting engineman.	
		Dec. 16	8.15 a.m. Crystal Palace to St. Paul's. Overshot Lordship Lane station eight coach lengths through cock not being opened between the first and second carriages. One minute delay.	
		" 16	11.17 p.m. Moorgate Street to Crystal Palace. Overshot Walworth Road platform one coach length. Fault of engineman.	
		" 31	10.59 a.m. Crystal Palace to Moorgate Street. Collision with buffer-stops at Moorgate Street station. Stops, platform, and staircase damaged, and engine left the road leading pair of bogie wheels.	
			3. <i>Delay in the working of trains in consequence of defects in or improper action of the brake—</i>	
			a. <i>Through failure of machinery or material.</i>	
		July 1	8.0 a.m. up Ramsgate. Eight minutes delay at Herne Bay through brake not releasing itself on No. 296 third class. Cannot say cause.	
		" 4	10.55 a.m. down Dover boat. Seven minutes at Canterbury. Coupling hose burst between engine and tender. Brake not worked the rest of the journey.	
		" 6	5.15 p.m. down Ramsgate. Five minutes at Herne Hill through brake not releasing itself, after attaching to city portion.	
		" 8	11.0 a.m. down Dover boat. Eight minutes between Fawkham and Meopham through brake applying itself on No. 24 first class. Cannot say cause. Coach tested in shops.	
		" 15	10.0 a.m. up Ramsgate. Two minutes between Bickley and Herne Hill, through brake applying itself on No. 236 first class. Coach tested in shops. Cause could not be discovered.	
		" 25	10.0 a.m. up Ramsgate. Twelve minutes, through brake applying itself on No. 17 saloon and No. 1 composite when running through Chatham, and stopping at Bush Bank to open cocks. Both carriages tested in shops. Cause could not be discovered.	
		Aug. 7	6.25 a.m. up Queenboro' boat. Three minutes at Beckenham. Brake applied itself on No. 70 brake-van. Tested in shops. Cause could not be discovered.	
		" 8	10.0 a.m. up Ramsgate. Two minutes at Broadstairs, through brake not coming off No. 25 brake-van, causing coupling of same to break; also on No. 3 first class. Vehicles tested in shops. Cause could not be discovered.	
		" 16	10.55 a.m. down Dover boat. Two minutes at Penge. Coupling hose burst on No. 230 first class.	

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London, Chatham, and Dover— <i>cont.</i>	Westinghouse Continuous Automatic Air Brake— <i>cont.</i>	Aug. 21	11.0 a.m. down Dover boat. Eight minutes, through union nut of main air pipe next to the pump slacking back between Newington and Sittingbourne. Brake not worked the rest of the journey.	
		Sept. 1	8.0 p.m. up Ramsgate. Eight minutes through brake going on in Ramsgate Tunnel.	
		" 3	4.0 p.m. Barnet to Victoria. Four minutes at Blackfriars through coupling hose bursting on Great Northern Company's horse box, No. 1216. Brake not afterwards worked.	
		" 8	7.30 p.m. Victoria to Bickley. Two minutes between Herne Hill and Dulwich, through brake applying itself on train. Cannot say cause.	
		" 9	3.15 p.m. down Granville. Five minutes through coupling hose bursting on No. 76 third class at Herne Hill. Brake worked on three vehicles only during rest of the journey. Load 15.	
		" 13	10.0 a.m. up Ramsgate. Six minutes at Bickley through coupling hose bursting of No. 2 composite, ninth vehicle from engine. Load 14.	
		" 21	2.0 p.m. Holborn to Herne Hill. Three minutes at Loughboro' through coupling hose bursting between engine and tender.	
		" 25	5.15 p.m. down Ramsgate. Five minutes at Grosvenor Road through brakes going on Nos. 9 and 13 saloons. Coaches tested in shops. Cause could not be discovered.	
		Oct. 7	7.50 a.m. Victoria to Hendon. Two minutes disconnecting brake at Carlton Junction, Kentish Town, through a defective washer of engine hose coupling, causing leakage.	
		" 12	2.0 p.m. Victoria to Dover. Two minutes at Grosvenor Road through coupling hose bursting between engine and tender.	
		" 21	9.20 a.m. Herne Hill to Victoria. Two minutes after starting through brake going on No. 70 second class. Cause could not be discovered.	
		" 26	3.5 p.m. up Dover boat. Four minutes at Shepherds Well through coupling hose bursting between engine and tender.	
		Nov. 3	8.40 a.m. down Dover boat. Nine minutes between Herne Hill and Chatham through brake applying itself on No. 239 first class two or three times. Coach tested in shops. Cause could not be discovered.	
		" 3	8.10 p.m. up Queenboro' boat. Four minutes at Middle Junction, Sittingbourne, through brake applying itself on No. 75 brake-van. Cause could not be discovered.	
		" 22	5.15 p.m. Victoria to Ramsgate. Two minutes at Margate through brake not releasing itself on No. 102 third class. Cannot say cause.	
		Dec. 17	9.15 p.m. Victoria to Gravesend. Two minutes at Grosvenor Road through brake applying itself. Leakage at union nut joint of air pipe on footplate.	

1.	2.	3.	4.	5.	
Name of Railway Company.	Name or Description of Brake which failed or caused delay.	Date of Failure.	Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	Number of Miles run by Trains fitted with Continuous Brakes.	
London, Chatham, and Dover— <i>cont.</i>	Westinghouse Continuous Automatic Air Brake— <i>cont.</i>	Dec. 19	8.0 a.m. Ramsgate to London. Thirteen minutes at Birchington through irregularity in the action of the brake on stopping, causing three couplings to be broken. Cause could not be discovered.	Automatic Vacuum Brake. (2 engines fitted. See Return, No.1, p. 16.)	
		" 24	3.28 p.m. Victoria to Moorgate Street. One minute. Brake applied itself on No. 183 second class brake. Stopped on Grosvenor Road bank to release it. Split tee piece.		
		" 30	9.10 a.m. Victoria to Gravesend. Two minutes at Dulwich owing to brake applying itself on No. 168 first class. Cause could not be discovered.		
		" 31	9.45 a.m. Victoria to Dover. One minute at Herne Hill through brake not coming off No. 118 first class, and No. 82 second. Cannot say cause.		
		<i>b. Through fault of Company's servants.</i>			
		July 3	8.45 p.m. down Queenboro' boat. Three minutes between Victoria and Chatham through the coupling pipes not being properly coupled up between 58 and 59 first class.		
		" 5	8.40 p.m. down Dover boat. Eight minutes between Bekesbourne and Canterbury through air pipe clip coming off between engine and tender. Neglect of fitter.		
		" 8	8.20 a.m. up Ashford. Two minutes at Swanley, owing to inability to release cock through the City and Victoria portions being then coupled together. Should have been done before starting from Ashford.		
		Aug. 24	7.45 a.m. Bickley to Victoria. Two minutes delay at Shortlands through brake pipes not being properly coupled up between the 4th and 5th coaches from the engine.		
		Oct. 21	9.30 p.m. up Dover boat. Five minutes when coming off Dover pier through brake pipe coming uncoupled between brake-van and carriage. Fault to properly couple up.		
		Dec. 12	6.54 p.m. Moorgate Street to Victoria. Twelve minutes late in starting, caused through difference in pressure of air left in train by engine working it into Moorgate Street, and engine coupled on to take it out. Additional air had to be pumped up.		
		" 26	11.0 a.m. down Dover boat. Six minutes on journey to Canterbury through brake being slightly on No. 229 first and 711 luggage van. City and Victoria portions not properly coupled up at Herne Hill.		
	1. Nil.			Automatic Vacuum Brake. 24,466 miles.	
	2. Failure or partial failure to act under ordinary circumstances to stop a train when required.				
	Oct. 31	4.25 p.m. Victoria to Dover. Overshot starting-signal at danger at Hewington a train's length. Neglect on part of driver to apply brake in time.			
	3. Nil.				

1. Name of Railway Company.	2. Name or Descrip- tion of brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
London, Tilbury, and Southend.	Westinghouse Automatic Brake. (30 engines fitted. See Return, No. 1, page 16.)		1 and 2. Nil.	382,689 miles.
			3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i>	
		July 4	7.48 p.m. train from Fenchurch Street to Shoebury. No delay. Hose coupling burst on North-Eastern horse box No. 206. Hand brake used Tilbury to Shoebury.	
		Aug. 7	5.22 p.m. train from Fenchurch Street to to Rainham. No delay. Air pump failed owing to breaking of piston valve rod. Driver worked hand brake from Fenchurch Street to Rainham. Also 6.10 p.m. Rainham to Plaistow.	
		Sept. 23	8.20 a.m. train from Tilbury to Fenchurch Street. Three minutes delay at Purfleet. Top spring of driver's brake valve broke. Engine changed at Purfleet, causing three minutes delay.	
		No failures reported.	—	Clark and Webb's Chain Brake. 316 miles.
Londonderry - - -	- - -	No failures reported.	—	Westinghouse Automatic Brake. 20,028 miles.
Manchester, Sheffield, and Lincolnshire.	Vacuum Automatic Brake. (171 engines fitted, and 157 goods engines used for passenger trains when required. See Return No. 1, page 16.)		1. Nil.	1,786,547 miles.
			2. <i>Failure or partial failure to act under ordinary circumstances to stop a train when required.</i>	
		Aug. 5	8.40 a.m. Cleethorpes to Manchester. Slightly overran platform at Worksop. Brake failed to act. Cause not definitely known, supposed due to converting cocks on London and North-Western stock, of which train was composed, not acting properly. 1 minute delay.	
		„ 6	9.0 a.m. Cleethorpes to Penistone. Over- ran platform at Stairfoot. Brake failed to act properly owing to brake adjust- ing screw breaking. Flaw in material. Engine No. 58. 3 minutes delay.	
		„ 9	4.30 p.m. Hull to Liverpool. Brake not working efficiently, and train slightly overshot platforms at Hessle and Ferryby. Cause unknown unless van valve had momentarily stuck. Engine No. 486. 2 minutes delay.	
		July 2	3. <i>Delay in the working of trains in con- sequence of defects in or improper action of the brakes.</i> 1.50 p.m. Sheffield to Barnsley. Late start of 12 minutes. Engine No. 243 unable to maintain vacuum, supposed due to dirt working on clappet valve seating, or ball in drip valve sticking, causing temporary stoppage to action of brake.	

1. Name of Railway Company.	2. Name or Description of brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
Manchester, Sheffield, and Lincolnshire— <i>cont.</i>	Vacuum Automatic Brake— <i>cont.</i>	Aug. 4	6.15 a.m. Manchester to Cleethorpes. Brake applied itself, and 8 minutes delay ensued. Piston rod bush on Engine No. 553 reduced below standard size through ordinary wear and tear.	
		" 5	9.30 a.m. Rotherham to Sheffield. 3 minutes delay at Broughton Lane. Driver unable to keep brake off. Sponge cloth found in train pipe of third vehicle from engine (No. not taken). Neglect of staff on North-Eastern Railway, where coach had been working.	
		" 19	No. 13 special Wombwell to Blackpool. Brake applied itself at Wombwell and Barnsley owing to gear on London and North-Western carriage No. 1162 being defective, and only working simple vacuum, detached at Barnsley. 45 minutes delay in discovering cause, and detaching.	
		" 24	No 155 special Rotherham to Ashburys. 8 minutes late start. Brake failed to work properly owing to hose-pipe on carriage No. 135 being defective. Ordinary wear and tear.	
		Sept. 7	12.30 p.m. Manchester to London. Brake not acting properly owing to defects in apparatus on Manchester, Sheffield, and Lincolnshire van No. 764, and Great Northern carriage No. 1907, and both had to be detached. Cause of defect on Great Northern vehicle not known; that on Manchester, Sheffield, and Lincolnshire van was a leakage at stuffing-box, due to gland being somewhat worn. 25 minutes delay in tracing faults and detaching.	
		Oct. 7	6.15 p.m. Sheffield to Manchester. Brake difficult to keep off, causing a little loss of time in running. At Penistone it was found that London and North-Western carriage No. 441, fitted with simple vacuum only, was defective in its "cut-off" arrangement, and causing brake to go on. 12 minutes delay in discovering fault and detaching vehicle.	
		" 22	12.30 a.m. Manchester to London. 5 minutes lost in running owing to brake applying itself. Waste in train pipe. Neglect of staff. Engine No. 425.	
		Dec. 19	8.35 a.m. Manchester to Cleethorpes. 6 minutes delay in starting from Dinting owing to brake not releasing itself on van No. 507. Piston temporarily stuck; brake worked all right before and afterwards.	
		" 23	5.40 a.m. Manchester to Lincoln. 10 minutes late start due to defect in brake gear of London and North-Western carriage No. 911, fitted with simple vacuum brake and through pipes. Blocks would not remain off when hose-pipes were connected. Cause not known. Hand-brake used to Guide Bridge, where carriage was detached.	
		No failures reported.	—	Smith's Vacuum Brake. 20,060 miles.

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
Manchester South Junction and Altrincham.	Smith's Vacuum Brake. (10 engines fitted. See Return No. 1, p. 16.)		1. Nil.	108,536½ miles.
			2. <i>Failure or partial failure to act under ordinary circumstances to stop a train when required.</i>	
		Sept. 2	8.50 a.m. passenger train, London Road to Altrincham, overran the platform at Stretford station 3 carriage lengths, owing to a vacuum brake pipe between the engine and front brake carriage becoming disconnected.	
		" 18	5.45 p.m. passenger train. Oxford Road to Altrincham, overran the platform at Old Trafford station 2 carriage lengths. Driver applied the brake too late.	
		Oct. 1	11.0 p.m. passenger train, Altrincham to Oxford Road, overran the platform at Timperley station, owing to a vacuum pipe between brake carriage No. 42 and second-class carriage No. 99 becoming disconnected.	
Mersey Railway	Vacuum Automatic Continuous Brake. (15 engines fitted. See Return No. 1, page 18.)		3. Nil.	112,898 miles.
			1 and 2. Nil.	
			3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i>	
		July 18	Delay of 7 minutes to 10.36 a.m. up train, at Park station, owing to pin having come out of brake rigging of No. 9 second class van. Neglect of servants.	
		Aug. 16	Slight delay to 8.15 p.m. up train, at Green Lane, owing to hose pipes between engine and van not being properly coupled up. Neglect of servants.	
Metropolitan	Smith's Vacuum Brake. (66 engines fitted. See Return No. 1, page 18.)		1. Nil.	1,107,196 miles. 103,775 trains.
			2. <i>Failure or partial failure to act under ordinary circumstances to stop a train when required.</i>	
		Sept. 13	A train overran the platform of a station on the journey the length of a coach, in consequence of the vacuum valve on engine failing through a piece of waste getting into it. 1 minute delay.	
		" 16	A train overran the platform of a station on the journey about half its length, in consequence of the pipes between engine and train coming uncoupled. Neglect of coupler. 4 minutes delay.	
		Oct. 25	A train overran the platform of a station on the journey its whole length, in consequence of the pipes in rear of train not having been properly coupled. 1 minute delay. Neglect of coupler.	
		Nov. 13	A train overran the platform of a station on the journey its whole length, in consequence of the pipes in front of engine coming uncoupled, through not having been properly coupled. 2 minutes delay. Neglect of coupler.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Train fitted with Continuous Brakes.
Metropolitan— <i>cont.</i>	Smith's Vacuum Brake— <i>cont.</i>	Dec. 15	A train overran the platform of a station on the journey the length of 2 coaches, in consequence of the pipes in rear of train not having been coupled before starting from terminal station. 2 minutes delay. Neglect of coupler.	
			3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i>	
		Aug. 13	The brake failed to act on the journey, in consequence of the chain breaking, caused by a bad weld. 1 minute delay.	
		,, 15	A vacuum sack on an engine was found to have given way. Wear and tear. 2 minutes delay, changing engines.	
		Sept. 19	The brake failed to act on the journey in consequence of the ring of a vacuum chain breaking. Caused by a bad weld. 3 minutes delay.	
		,, 25	On arriving at a station on the journey the brake failed to act in consequence of the vacuum steam pipe nut breaking. Weak construction. 3 minutes delay.	
		Oct. 4	The brake failed to act on the journey in consequence of the vacuum steam-cock breaking. Caused through weak construction. 2 minutes delay.	
Metropolitan District -	- - -	No failures reported, and no delay calling for special remarks.	—	Westinghouse Air Pressure Brake. 773,885 miles.
Midland	Westinghouse Automatic Air Brake. (46 engines fitted. See Return No. 1, page 18.)	Sept. 2	1. Nil. 2. <i>Failure or partial failure to act under ordinary circumstances to stop a train when required.</i> 12.8 a.m. train from Carlisle to London. Overran Appleby station platform the length of three vehicles, owing to brake leaking off engine No. 1577 immediately on application, through brake pistons commencing to blow.	9,993 miles.
		July 13	3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i> 1.25 p.m. train from Carlisle to London. 6 minutes delay at Lazonby, where train had to be stopped to release brake on bogie brake No. 1206, its triple valve sticking.	
		Sept. 6	12.8 a.m. train from Carlisle to London. 8 minutes delay near Stainforth, where the brake could not be released, owing to air pump clacks of engine No. 1309 becoming clogged.	
		,, 14	1.25 p.m. train from Carlisle to London. 3 minutes delay at Lazonby, where train had to be stopped to release brake from engine No. 1576, its triple valve sticking.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
Midland— <i>cont.</i>	Westinghouse Automatic Air Brake— <i>cont.</i>	Sept. 27	1.25 p.m. train from Carlisle to London. 1 minute delay near Appleby, releasing brake from composite No. 436, its triple valve sticking.	7,460,924 miles.
		" 27	3.14 p.m. train from Hellifield to Leeds. 3 minutes delay near Skipton, where train was stopped by rear hose of the fourth vehicle, third-class carriage No. 1, bursting.	
		Nov. 5	10.25 a.m. train from Morecambe to Brad- ford. 14 minutes delay in running and at Giggleswick, where the brake stopped the train, owing to nut in pipe from air pump to main reservoir of engine No. 814 slackening.	
		" 27	9.15 p.m. train from London to Carlisle. 1 minute delay at Ormside, where the train had to be stopped to release the brake from the wheels of engine No. 1574, its triple valve being frozen.	
		Dec. 13	12.8 a.m. train from Carlisle to London. 2 minutes delay near Lazonby. The brake applied itself on wheels of engine No. 1311, owing to leakage at nut of three-way cock.	
	Vacuum Automatic Brake (Non- leak off). (863 engines fitted. <i>See</i> Return No. 1, page 18.)		1 and 2. Nil.	
			3. <i>Delay in the working of trains in con- sequence of defects in or improper action of the brakes.</i>	
		July 2	4.38 p.m. train from Peterboro' to Lei- cester. 11 minutes delay at Stamford and Manton, owing to piston rod of bogie carriage No. 637 being fitted too tightly in bush.	
		" 6	4.55 p.m. train from Leicester to Bedford. 4 minutes delay at Wigston, owing to driver not keeping valve of engine No. 824 in proper working order.	
		Aug. 5	10.0 p.m. train from Leeds to Derby. 6 minutes delay at Tapton junction by temporary leakage on vehicles after stopping at signals.	
		Oct. 4	8.40 p.m. train from Birmingham to Bristol. 20 minutes delay at Bromsgrove ex- amining and detaching Somerset and Dorset Joint Line composite No. 26, its roller ring having got over the top of the piston of the short cylinder.	
		" 19	1.20 p.m. train from Birmingham to Derby. 16 minutes delay at Wilnecote, examin- ing and detaching Somerset and Dorset Joint Line composite No. 26, its roller ring having got over the top of the piston of short cylinder (cylinder since lengthened).	
		" 21	2.30 p.m. train from Liverpool to Carlisle. 27 minutes delay—2 at Blackburn by brake not releasing quickly, and 25 minutes at Hellifield detaching and disconnecting vehicles, owing to a sponge cloth having been put in hose pipe of Midland Scotch Joint Stock com- posite No. 43, when on the Lancashire and Yorkshire Railway.	

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Midland— <i>cont.</i>	Vacuum Automatic Brake (Leak off). (47 engines fitted. See Return No. 1, page 18.)	July 13	1. Nil. 2. <i>Failure or partial failure to act under ordinary circumstances to stop a train when required.</i> 7.10 a.m. train (excursion) from Black- burn to Morecambe. Overran Wylpshire and Langho platforms the train's length, owing to a defect in pipe of bogie com- posite brake No. 162. 10 minutes delay.	253,890 miles.
		Aug. 25	9.20 a.m. from Derby to Nottingham. Overran Spondon platform the length of three vehicles, owing to shop fitter leaving a pipe blocked, to keep out dirt, on engine No. 7, just out of shops. 2 minutes delay.	
		July 13	3. <i>Delay in the working of trains in con- sequence of defects in or improper action of the brakes.</i> 6.30 p.m. train from Sheffield to Chester- field. 2 minutes delay at Dore and Totley, examining defective hose-pipe of engine No. 1530.	
		Sept. 17	1.0 p.m. train from Carlisle to London. 2 minutes delay at Bedford, owing to the combined air and vacuum valve of engine No. 1675 not working quickly when brake was applied to reduce speed.	
North-Eastern	The Westing- house Auto- matic Brake (440 engines fitted. See Return No. 1 page 20.)	Aug. 8	1. Nil. 2. <i>Failure or partial failure to act under ordinary circumstances to stop a train when required.</i> 7.55 a.m. train, Withernsea to Hull, engine No. 802. Overran the platform at Stepney. The pump not working, owing to a defective needle in pump- governor.	5,527,871½ miles.
		" 28	6.20 p.m. train, Newcastle to Tynemouth, engine No. 319. Overran the platform at the Manors. Pump not working.	
		Oct. 1	4.30 p.m. train, Leeds to Newcastle, engine No. 1,328. Overran the ticket platform at Harrogate, the inch-cock between the van and the first carriage being shut. Neglect of servant.	
			3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i>	
		July 3	1.0 p.m. train, Harrogate to York, engine No. 1804. 3 minutes lost. Donkey pump failed, the upper main-valve having worked loose.	
		" 8	10.2 a.m. train, York to Scarbro', engine No. 777. 4 minutes at Burton Lane. Hose-pipe on Great Northern saloon No. 212 burst.	

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North-Eastern— <i>cont.</i>	The Westing- house Auto- matic Brake — <i>cont.</i>	July 12	7.35 a.m. train, Newcastle to Leeds, engine No. 1,479. 1 minute at Harrogate, the brake on the train not releasing throughout. The air pipe nipple of donkey pump broken.	
		" 13	12.5 a.m. train, York to Edinbro', engines Nos. 1504 and 19. 9 minutes at Newcastle. Hose-pipe on Great Northern horse-box No. 2277 burst.	
		" 18	4.0 p.m. train, Carlisle to Newcastle, engine No. 901. 8 minutes at Low Row. Hose-pipe on Glasgow and South-Western truck No. 11,026 burst.	
		" 22	5.5 p.m. train, Newcastle to York, engine No. 19. 7 minutes between Croft and Dalton. The pipe connecting donkey pump to main reservoir broken at the tee piece.	
		" 25	1.8 a.m. train, York to Edinbro', engine No. 1473. 8 minutes near Huttons Wood. Hose-pipe on Great Northern saloon No. 15 burst.	
		" 25	11.45 p.m. train, York to Edinbro', engine No. 1471. 3 minutes at Shipton, the hose couplings between the rear carriage and van not being properly connected, causing leakage.	
		" 26	11.50 a.m. train, Leeds to York, engine No. 1,475. 4 minutes at Copmanthorpe. The pipe from donkey pump to main reservoir broken at the reservoir end.	
		" 31	8.40 a.m. train, York to Scarbro', engine No. 186. 2 minutes at Seamer, the nipple having blown out of hose-pipe on third-class carriage No. 399.	
		Aug. 5	10.10 a.m. train, Carlisle to Newcastle, engine No. 1494. 6 minutes at Carlisle, by leak in hose coupling on milk-van No. 502, from defective washer.	
		" 7	10.0 a.m. train, Edinbro' to York, engine No. 901. 5 minutes at Edinbro', owing to donkey pump stopping.	
		" 21	10.0 a. m. train, Edinbro' to York, engine No. 366. 6 minutes at Cockburnspath, the brake going on by leakage, the lower part of the triple valve on tender not being properly adjusted.	
		" 22	1.45 a.m. train, York to Edinbro', engine No. 178. 6 minutes near Low Fell. Hose-pipe on Great Northern third-class saloon No. 111 burst.	
		" 27	3.45 p.m. train, Malton to Whitby, engine No. 1810. 4 minutes between Pickering and Levisham. Hose-pipe on Great Northern third-class carriage No. 1956 burst.	
		" 28	3.45 a.m. train, York to Newcastle, engine No. 1476. 2 minutes at Waterworks cabin, brake being on upon Midland Post Office van No. 5.	
		" 29	10.0 p.m. train, Scarbro' to York, engine No. 180. 4 minutes between Kirkham and Baston Hill. Hose-pipe on Midland saloon No. 652 burst.	
		" 30	2.5 p.m. train, Hull to Hornsea, engine No. 802. 10 minutes lost on the journey, Hull to Hornsea and back, by the pump stopping at Stepney. Neglect of servant.	

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North-Eastern— <i>cont.</i>	The Westinghouse Automatic Brake — <i>cont.</i>	Sept. 4	7.50 p.m. train, South Shields to Darlington, engine No. 1164. 15 minutes lost owing to the brake not releasing at Leamside, Shincliffe, and Aycliffe stations. Top valve spring in driver's valve broken.	
		„ 13	6.20 p.m. train, Leeds to West Hartlepool, engine No. 1269. 3 minutes at Narsforth, brake being on upon rear portion of train, the inch cock on one of the carriages being shut. Fault of guard.	
		„ 19	10.20 a.m. train, Whitby to West Hartlepool, engine No. 664. 4 minutes at Ingleby. Main pipe on horse-box No. 96 broken.	
		„ 20	10.20 p.m. train, Edinbro' to York, engine No. 365. 4 minutes at Edinboro', changing hose-pipe on East Coast composite carriage No. 82, owing to a leak from defective washer.	
		„ 22	7.5 p.m. train, Haltwhistle to Newcastle, engine No. 1467. 6 minutes at Stocksfield. Main pipe broken at swan neck on milk truck No. 33.	
		„ 25	5.5 p.m. train, York to Newcastle, engine No. 1474. 4 minutes near Sessay. Hose-pipe on Great Northern composite carriage No. 299 burst.	
		„ 30	12.5 a.m. train, York to Edinbro', engine No. 1475. 5 minutes at York, changing hose-pipe on East Coast first class carriage No. 107, owing to a leak from defective washer.	
		Oct. 2	2.0 p.m. train, Newcastle to York, engine No. 178. 5 minutes near Newton sidings. Hose-pipe on Great Northern composite carriage No. 133 burst.	
		„ 5	2.50 p.m. train, Edinbro' to York, engine No. 852. 3 minutes at Berwick Bridge and 2 minutes at Scremerston, the brake being on upon East Coast van No. 144.	
		„ 7	8.5 p.m. train, Leeds to Newcastle, engine No. 1476. 5 minutes at Pelaw, having to take the brake off by the release valve on each vehicle. Leak in governor pipe.	
		„ 10	8.35 p.m. train, Newcastle to Tynemouth, engine No. 1160. 3 minutes at Newcastle, owing to a leak in hose coupling on van No. 293, the washer being worn.	
		„ 10	10.0 a.m. train, Kelso to Berwick, engine No. 547. 2 minutes between Twizel and Norham. The half-inch connecting pipe from triple valve to main pipe on van No. 140 broken.	
		„ 19	2.49 a.m. train, Normanton to York, engine No. 552. 2 minutes at Sherburn, the brake being on upon van No. 473. The inch cock at rear of last vehicle not properly shut. Neglect of servants.	
		„ 19	12.15 p.m. train, Carlisle to Newcastle, engine No. 367. 5 minutes at Warden. The half-inch cock on third class carriage No. 1975 broken. Faulty material.	
		„ 20	3.35 a.m. train, York to Berwick, engines Nos. 362 and 1474. 5 minutes at Poppleton Junction, brake being on upon North British composite carriages Nos. 212 and 222. The inch cock between the two engines was shut. Neglect of servant.	

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North-Eastern— <i>cont.</i>	The Westing- house Auto- matic Brake — <i>cont.</i>	Oct. 27	6.0 p.m. train, Carlisle to Newcastle, engine No. 370. 10 minutes at Low Row, attaching carriage truck No. 80 to front of train, and afterwards shunting it to the rear, owing to the half-inch cock being broken.	
		Nov. 1	2.14 a.m. train, Leeds to Hull, engine No. 230. 6 minutes between Howden and Hull. Donkey pump stopped. Reversing piston bush defective.	
		" 2	9.52 p.m. train, Hull to York, engine No. 156. 16 minutes at Hull, attaching third class carriage No. 2050, and detaching it again, owing to a leak caused by the hose-pipe washer being defective.	
		" 3	11.10 p.m. train, Leeds to York, engine No. 698. 2 minutes at Holgate Bridge, brake not releasing owing to donkey pump stopping. Governor valve spring broken.	
		" 8	7.47 a.m. train, Barnard Castle to Middleton, engine No. 1444. 2 minutes near Ronaldkirk. Hose-pipe between engine and tender burst.	
		" 17	6.0 p.m. train, Carlisle to Newcastle, engine No. 912. 5 minutes at Low Row, the brake on third-class carriage No. 1572 not releasing. The one-inch cock between milk truck and front van had not been opened. Fault of servant.	
		" 18	1.50 p.m. train, Newcastle to York, engines Nos. 1475 and 1465. 2 minutes at Relly Mill Junction, brake being on upon Great Northern van No. 145, and 2 minutes at Darlington releasing the brake on the carriages by the release valves, owing to a leak. Air pipe from donkey pump to main reservoir on engine No. 1475 broken.	
		" 19	9.15 a.m. train, Berwick to Newcastle, engine No. 924. 5 minutes at Bilton, the brake on carriage-truck No. 25 not releasing. The cylinder cover broken and the piston rod jammed.	
		Dec. 3	6.55 p.m. train, Leeds to York, engine No. 451. 10 minutes at Colton, owing to the donkey-pump governor pipe giving way near the mitre joint. Defective pipe.	
		" 14	5.15 p.m. train, Newcastle to South Shields, engine No. 1160. 6 minutes at Newcastle. Donkey pump not working properly. Fault of inspection.	
		" 26	3.5 a.m. train, Newcastle to Edinbro', engine No. 1519. 10 minutes at Nether-ton. Hose-pipe on Great Northern saloon No. 16 burst.	
	Vacuum Auto- matic Brake. (6 engines fitted. See Return No. 1 page 22.)		1. Nil.	18,549½ miles.
			2. <i>Failure or partial failure to act under ordinary circumstances to stop a train when required.</i>	
		Aug. 8	2.45 p.m. train, York to Scarbro', engine No. 385. Overran the platform at Seamer two carriage lengths. Fault of driver not applying the brake properly.	
			3. Nil.	

1. Name of Railway Company.	2. Name or Descrip- tion of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
North London	Clark and Webb's Chain Brake.		1 and 2. Nil. 3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i> Two minutes at Canonbury, owing to spindle of small operating brake wheel breaking on brake-van No. 1010. Failure of material. Six minutes delay at Maiden Lane, owing to brake working on on brake-van No. 49. Neglect of examiner. Two trips lost to Acton, owing to brake working on on brake-van No. 69. Neglect of examiner.	911,048 miles.
North Staffordshire	- - -	No failures reported.	—	Vacuum Brake. 501,171 miles. Automatic Vacuum 1,856 miles.
Pontypridd, Caerphilly, and Newport.	- - -	No failures reported.	—	
Rhondda and Swansea Bay.	- - -	No failures reported.	—	Westinghouse. 12,245 miles.
Rhymney	Westinghouse Automatic Brake. (17 engines fitted. See Return No. 1, page 22.)	July 15	1 and 2. Nil. 3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i> 9.3 a.m. train, Cardiff to Merthyr. Hose-pipe burst on composite carriage No. 61 when leaving Llancaiach station. Delay 2 minutes.	94,536 miles.
		„ 19	4.15 p.m. train, Cardiff to Rhymney. Hose-pipe burst on third-class carriage No. 42 in Caerphilly Tunnel. Delay 4 minutes.	
		Aug. 20	4.35 p.m. train, Merthyr to Cardiff. Hose-pipe burst on third-class carriage No. 38 on entering Caerphilly Tunnel. Delay 2 minutes.	
		Sept. 2	7.15 p.m. train, Cardiff to Rhymney. Hose-pipe burst on third-class carriage No. 38 when running between George Inn and Tir Phil stations. Delay 3 minutes.	
Seacombe, Hoylake, and Deeside.	- - -	No failures reported.	—	Automatic Vacuum Brake. 85,567 miles.
Severn and Wye and Severn Bridge.	- - -	No failures reported.	—	Clark's Chain Brake. 37,410 miles.
Somerset Joint Com- mittee.	Vacuum Auto- matic Brake. (30 engines fitted. See Return No. 1, page 24.)	Aug. 22	1 and 2. Nil. 3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i> One minute delay at Cole by brake not releasing quickly from London and South-Western saloon No. 26.	269,230 miles.
		No failures reported.	—	Wilkins and Clark's Chain.

1. Name of Railway Company.	2. Name or Descrip- tion of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
South-Eastern	Simple Vacuum Brake. (109* engines fitted. See Return No. 1, page 24.)		1. Nil.	2,695,848 miles.
			2. <i>Failure or partial failure to act under ordinary circumstances to stop a train when required.</i>	
		July 8	The 7.20 p.m. special train, Hastings to Charing Cross, overran Tunbridge Wells platform eight carriage lengths. A screw coupling had failed on third-class carriage No. 1050, and caused the brake hose-pipes to become discon- nected.	
		„ 29	The 4.52 p.m. Charing Cross to Dartford train overran London Bridge platform about the length of the train. The engine was working simple, and the train was fitted automatic, and a shunter at Cannon Street coupled up the auto- matic pipes without arranging for the engine (No. 327) to be changed to automatic. - Carelessness of servants.	
		Aug 20	The 7.42 a.m. Cannon Street to Dartford train overran Dartford platform seven carriage lengths, owing to the brake pipes in the rear of second-class cari- age No. 2019 becoming separated. The couplings were in good order. Carelessness in servants in coupling up the pipes.	
		Sept. 3	The 10.20 a.m. down Woolwich train overran Westcombe Park platform three carriage lengths, owing to the vacuum valve spindle of engine No. 147 breaking.	
		Oct. 20	The 3.45 p.m. Charing Cross to Dartford train overran Waterloo platform two carriage lengths. No defect could be found on examination of engine No. 235 or the train.	
		„ 27	The 5.0 p.m. Cannon Street to Chisle- hurst train overran London Bridge platform five carriage lengths, owing to the brake pipes between first-class cari- ages Nos. 1194 and 1246 having become partially separated. Cause unknown.	
		Dec. 1	The 8.55 p.m. down Mid Kent train overran Elmers End platform two cari- age lengths, owing to the brake pipes between first-class carriages Nos. 1194 and 1487 becoming partially separated. Cause unknown.	
		„ 12	The 12.20 p.m. Charing Cross to Dartford train overran Waterloo platform three carriage lengths, owing to the brake pipes on third-class carriage No. 2171 having been left uncoupled at Charing Cross by a shunter.	
			3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i>	
		Oct. 28	The 11.22 a.m. Addiscombe Road to Charing Cross train was delayed five minutes at Cannon Street. The engine (No. 247) is fitted to work automatic or simple brake, and in changing from automatic to simple, the driver mis- managed the connecting cocks.	

* Exclusive of the engines also fitted to work automatic vacuum braked trains.

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of miles run by Trains fitted with Continuous Brakes.
South-Eastern— <i>cont.</i>	Simple Vacuum Brake— <i>cont.</i>	Nov. 9	The 10.25 a.m. up Tunbridge train was delayed eight minutes at Cannon Street. The engine (No. 79) is fitted to work automatic or simple, as required, and the driver, rather than change his brake to simple, attempted to work the simple-fitted train with the engine set to work automatic, by destroying the vacuum in the engine chamber.	(Included in mileage of the simple vacuum brake.)
		„ 19	The 12.5 p.m. up Reading train was delayed four minutes at Betchworth, owing to the automatic brake on third-class carriage No. 2100 being on. The train was working simple, but the above carriage, which was next engine No. 187, was fitted automatic, and provided with simple through pipes, and the shunter had coupled up both the automatic and the simple pipes to the engine. Inexperience of servants.	
		Dec. 31	The 4.50 p.m. down Hastings train had to be stopped at London Bridge to allow the guard to release the brakes on bogie carriage No. 1894 and third-class No. 2045. The train had been arranged to work automatic from Cannon Street, but was changed to simple, and these carriages were not leaked off before leaving Cannon Street. Neglect of servants.	
	Automatic Vacuum Brake. (136 engines fitted. See Return No. 1, p. 24.)		1. Nil.	
			2. <i>Failure or partial failure to act under ordinary circumstances to stop a train when required.</i>	
		July 14	The 6.10 p.m. up Hastings train was delayed 8 minutes at Tunbridge, owing to the driver being under the impression that his brake was not working properly. The defect appeared to have been in the vacuum gauge of engine No. 226.	
		Dec. 4	The 12 noon up Dover train, overran Sandling Junction platform three carriage lengths, owing to a defect in the ejector of engine No. 78.	
			3. <i>Delay in the working of trains in consequence of defects in or improper action of brakes.</i>	
		Aug. 23	The 4.40 a.m. empty train, Rotherhithe Road to Charing Cross, was suddenly stopped at Corbett's Lane signals by a signalman who was riding in a brake-van tampering with the guard's valve.	
		Sept. 3	The 4.45 p.m. up Dover train was delayed 14 minutes on the journey, owing to the brake applying itself. It was discovered, on examination of train, that the shunter, in coupling No. 198 to the train, had left the washer of brake coupling on the "dummy," and thus caused a leakage.	
		„ 8	The 3.15 p.m. down Wadhurst train was suddenly stopped on Cannon Street bridge, owing to the brake pipes on bogie composite No. 2277 and luggage van No. 196 becoming disconnected. This was caused by a draw-bar hook on carriage No. 2277 breaking.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
South-Eastern— <i>cont.</i>	Vacuum Auto- matic Brake — <i>cont.</i>	Sept. 11	The 4.50 p.m. down Hastings train was delayed 9 minutes at St. Leonards, owing to engine No. 188 being unable to start. It was found that the packing ring of the brake piston of tender was leaking, and had caused the piston to hang up in the cylinder.	
		Oct. 1	The 9.14 a.m. up Edenbridge train was stopped at Cannon Street West Junction signals, and on the driver endeavouring to release the brake he was unable to do so. The brake on engine No. 202, and also the train brakes, were subsequently examined, and no defect found.	
		" 26	The 8.25 p.m. down Oxted train (engine No. 345), when running into Cannon Street station, suddenly came to a stand, owing to the brake applying itself. No defect discovered to account for this.	
		" 28	The 11.0 a.m. down Brussels express, engine No. 210, was stopped by the driver at ET signals, London Bridge, owing to the brake not being properly off the train. It was found that the brake on luggage van No. 308 had not been properly released before leaving Cannon Street. This vehicle was in detaching portion, and the brake was not in operation with the train brake.	
		Nov. 1	The 3.55 p.m. down Hastings train was delayed 4 minutes at Cannon Street, owing to engine No. 198 not being able to maintain a vacuum, and the engine brake having to be changed to simple. It is supposed that the brake coupling on the leading end of the engine was not properly seated on the dummy.	
		" 15	The 8.10 a.m. down Dover train was stopped outside Dover, and lost time on the journey to the extent of 22 minutes, owing to the brake blocks not coming off the wheels properly. It was found that the rolling ring in the automatic cylinder of tender had become displaced. Engine No. 269.	
		" 16	The 8.25 p.m. down Oxted train was stopped at Stoney Street signals by the driver applying the brake, and when he endeavoured to take it off he was unable to do so. On examination of the train, no defect could be found. Engine No. 352.	
		" 22	The 8.5 a.m. train from Rotherhithe Road to Beckenham Junction was delayed 10 minutes at Lewisham signals, owing to the driver being unable to take off the brake. It was discovered that the brake coupling on leading end of engine No. 346 had become unseated on dummy.	
		" 25	The 7.13 a.m. up Hastings train was delayed 2 minutes at Dunton Green, owing to a leakage in the brake. It was found that the nut that couples the train pipe to the ejector had slacked back, and caused the leakage. Engine No. 191.	

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South-Eastern— <i>cont.</i>	Vacuum Auto- matic Brake — <i>cont.</i>	Dec. 1	The 6.20 p.m. down Dover train was delayed 1 minute at Cannon Street, owing to engine No. 274 being unable to obtain a sufficient vacuum. The brakes on London and South-Western carriage trucks Nos. 42 and 79, which were attached to the rear of the train, were uncoupled from the train brake, and a sufficient vacuum was obtained.	
		" 23	The 5.35 p.m. Charing Cross to Hastings train was delayed 6 minutes at Orpington, owing to a hose-pipe on bogie composite No. 1901 having collapsed.	
Taff Vale -	- - -	No failures reported.	---	Smith's Auto- matic Vacuum Brake. 173,604 miles.
West Lancashire -	- - -	No failures reported.	---	Westinghouse Au- tomatic Brake. 117,782 miles.
Wrexham, Mold, and Connah's Quay.	- - -	No failures reported.	---	Clark and Webb's Chain Brake. 6,050 miles.
SCOTLAND.				
Ayrshire and Wig- townshire.	- - -	No failures reported.	---	Westinghouse. 24,016 miles.
Caledonian -	Westinghouse Automatic Brake. (302 engines fitted. <i>See</i> Return No. 1, page 26.)	July 5	1 and 2. Nil. 3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i>	2,945,504 miles.
		" 10	5.45 p.m. Montrose to Arbroath delayed 2 minutes between Montrose and Dub-ton. Cause: hose-pipe bursting on Caledonian third class carriage No. 163.	
		" 12	11.55 a.m. Perth to Glasgow, delayed 2 minutes at Perth. Cause: hose-pipe bursting on North British meat van No. 23,466.	
		" 13	1.50 p.m. Perth to Glasgow delayed 3 minutes at Auchterarder. Cause: hose-pipe bursting on North British carriage No. 190.	
		" 22	2.30 p.m. Glasgow to Oban delayed 3 minutes at Connel Ferry. Cause: hose-pipe bursting on Caledonian third class carriage No. 321.	
		" 27	6.55 p.m. Lesmahagow to Glasgow delayed 6 minutes at Ayr Road. Cause: hose-pipe bursting on Caledonian engine No. 166.	
		" 30	6.55 p.m. Blackwood to Glasgow delayed 5 minutes at Hamilton Central. Cause: hose-pipe bursting on Caledonian milk-truck No. 150.	
			1.30 p.m. Edinburgh to Perth delayed 2 minutes at Perth ticket platform. Cause: hose-pipe bursting on North British first class carriage No. 393.	

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Caledonian— <i>cont.</i>	Westinghouse Automatic Brake— <i>cont.</i>	Aug. 3	2.37 a.m. Carlisle to Perth delayed 6 minutes at Carstairs. Cause: hose-pipe bursting on London and North-Western sleeping saloon No. 114.	
		" 7	7.35 p.m. Perth to Larbert delayed 3 minutes between Forgandenny and Forteviot. Cause: hose-pipe bursting on North British third class carriage No. 686.	
		" 10	2.15 p.m. Dundee to Blairgowrie delayed 2 minutes at Newtyle. Cause: hose-pipe bursting on Caledonian third class carriage No. 687.	
		" 19	7.50 a.m. Perth to Glasgow delayed 3 minutes at Alloa Junction. Cause: failure of copper pipe on Caledonian engine No. 110.	
		" 24	1.30 p.m. Edinburgh to Perth delayed 3 minutes at Stirling. Cause: hose-pipe burst on Highland Railway close van No. 1755.	
		" 31	1.50 p.m. Perth to Larbert delayed 3 minutes at Bannockburn. Cause: hose-pipe bursting on Caledonian first class carriage No. 235.	
		" 31	3.12 p.m. Carlisle to Glasgow delayed 3 minutes at Dinwoodie. Cause: hose-pipe bursting on London and North-Western horse-box No. 337.	
		Sept. 2	8.45 a.m. Glasgow to Gourock delayed 3 minutes at Penilee. Cause: hose-pipe bursting on Caledonian first class carriage No. 150.	
		" 3	2.15 p.m. Glasgow to Wemyss Bay delayed 5 minutes at Parklee. Cause: hose-pipe bursting on Caledonian van No. 99.	
		" 4	3.5 a.m. Carlisle to Aberdeen delayed 2 minutes between Stonehaven and Muchalls. Cause: hose-pipe bursting on Great North of Scotland horse-box No. 1239.	
		" 5	6.25 a.m. Glasgow to Gourock delayed 3 minutes at Bogstone. Cause: hose-pipe bursting on Caledonian composite carriage No. 203.	
		" 6	9.45 a.m. Perth to Aberdeen delayed 2 minutes after passing Newmills. Cause: failure of copper pipe on Caledonian engine No. 83.	
		" 12	7.0 p.m. Glasgow to Dundee delayed 4 minutes near Glencarse. Cause: failure of copper pipe on Caledonian engine No. 101.	
		" 12	9.0 a.m. Aberdeen to Glasgow delayed 4 minutes at Stirling. Cause: hose-pipe bursting on Caledonian meat-van No. 7873.	
		" 13	5.0 p.m. Glasgow to Edinburgh delayed 2 minutes at Cambuslang. Cause: failure of copper pipe on Caledonian engine No. 430.	
		" 20	9.20 a.m. Perth to Aberdeen delayed 5 minutes at Farnell Road. Cause: hose-pipe bursting on West Coast Joint Stock composite carriage No. 203.	
		" 23	10.0 a.m. Aberdeen to Carlisle delayed 5 minutes at Nethercleugh. Cause: hose-pipe bursting on Caledonian brake-van No. 122.	
		" 24	4.30 p.m. Carlisle to Glasgow delayed 5 minutes at Lockerbie. Cause: hose-pipe bursting on West Coast Joint Stock composite carriage No. 135.	

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Caledonian— <i>cont.</i>	Westinghouse Automatic Brake— <i>cont.</i>	Oct. 10	7.35 p.m. Perth to Larbert delayed 9 minutes between Bannockburn and Pleau Junction. Cause: hose-pipe bursting on Great North of Scotland third class carriage No. 2071.	
		" 11	1.12 p.m. Carlisle to Glasgow delayed 3 minutes at Beattock. Cause: hose-pipe bursting on West Coast Joint Stock composite No. 133.	
		Nov. 19	3.5 a.m. Carlisle to Glasgow delayed 3 minutes between Kingmoor and Rockcliffe. Cause: hose-pipe bursting on London and North-Western horse-box No. 164.	
		" 21	6.55 p.m. Glasgow to Carlisle delayed 5 minutes at Fullwood Junction. Cause: failure of copper pipe on Caledonian engine No. 176.	
		" 29	9.25 a.m. Dundee to Perth delayed 5 minutes at Ninewells Junction. Cause: failure of stop cock on Caledonian composite carriage No. 165.	
		Dec. 12	5.40 p.m. Glasgow to Cathcart delayed 6 minutes at Bridge Street. Cause: hose-pipe bursting on Caledonian first class carriage No. 303.	
		" 13	4.40 p.m. Aberdeen to Carlisle delayed 4 minutes between Whitemoss and Auchterarder. Cause: hose-pipe bursting on Highland Railway game van No. 292.	
		" 13	10.0 a.m. Aberdeen to Carlisle delayed 5 minutes at Kirtlebridge. Cause: hose-pipe bursting on Caledonian meat-van No. 6680.	
		" 21	10.30 a.m. Perth to Glasgow delayed 5 minutes between Greenhill and Cumbernauld. Cause: hose-pipe bursting on Caledonian composite carriage No. 253.	
		No failures reported.	—	Steel McInnes Automatic Brake. 50,368 miles.
Glasgow and South- Western.	Westinghouse Automatic Brake. (94 engines fitted. See Return No. 1, page 26.)		1 and 2. Nil.	659,020 miles.
			3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i>	
		July 4	Train delayed 3 minutes near Kilbirnie by a hose-pipe bursting on third class carriage No. 378.	
		" 26	Train delayed 3 minutes at Greenock by a hose-pipe bursting on third class carriage No. 291.	
		Aug. 20	Train delayed 4 minutes at Millikenpark by a hose-pipe bursting on third class carriage No. 315.	
		" 21	Train delayed 3 minutes at Shields Road by a hose-pipe bursting on composite carriage No. 42.	
		" 27	Train delayed 4 minutes near Dubbs Junction by a hose-pipe bursting on brake-van No. 12.	
		Sept. 21	Train delayed 5 minutes near Johnstone by a hose-pipe bursting on brake-van No. 12.	
		" 27	Train delayed 4 minutes near Killywhan by a hose-pipe bursting on Post Office van No. R. 1.	

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Glasgow and South- Western— <i>cont.</i>	Westinghouse Automatic Brake— <i>cont.</i>	Oct. 1	Train delayed 4 minutes near Ruthwell by a hose-pipe bursting on Post Office van No. 1.	881,477 miles.
		" 19	Train delayed 2 minutes at Kilmalcolm by a hose-pipe bursting on N.B. composite carriage No. 284.	
		Nov. 2	Train delayed 4 minutes at Dalry by a hose-pipe bursting on third class carriage No. 403.	
		Dec. 3	Train delayed 5 minutes at Killochan by a hose-pipe bursting on third class carriage No. 1.	
		" 16	Train delayed 3 minutes at Paisley by a hose-pipe bursting on M. S. J. S. brake van No. 20.	
		" 27	Train delayed 2 minutes at Main Street (Glasgow) by the brake binding on third class carriage No. 460. Servants at fault.	
		" 30	Train delayed 2 minutes at Irvine by a hose-pipe bursting on tender No. 137.	
	Vacuum Automatic Brake. (46 engines fitted. <i>See</i> Return No. 1, page 26.)		1 and 2. Nil.	
			3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i>	
		July 25	Train delayed 5 minutes at Port Eglinton by the brake binding on engine and tender No. 140.	
		" 30	Train delayed 6 minutes at Neilston by the brake binding on Midland Pullman car No. 23.	
		Aug. 8	Train delayed 4 minutes at Ibrox by the brake binding on train. Servants at fault.	
		Sept. 13	Train delayed 5 minutes at Racks by a leakage from hose coupling of meat van No. 10,482.	
		" 16	Train delayed 8 minutes at Johnstone by the brake binding on train.	
		Nov. 28	Train delayed 4 minutes at Prestwick by a leakage from hose-pipe of tender No. 115.	
		Dec. 3	Train delayed 14 minutes near Dumfries by the brake binding on Midland composite carriage No. 357.	
		" 4	Train delayed 5 minutes at Dumfries by difficulty in changing vacuum apparatus on L. & N.W. brake-van No. 2066.	
Great North of Scotland	Westinghouse Automatic Brake. (43 engines fitted. <i>See</i> Return No. 1, page 26.)		1 and 2. Nil.	290,649 $\frac{3}{4}$ miles.
			3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i>	
		Oct. 12	1.30 p.m. special train, Ballater to McDuff, stopped between Turriff and Plaidy, in consequence of one of the hose-pipes on P.B. van No. 29 bursting. 2 minutes detention releasing brakes.	
Highland - -	Automatic Vacuum Brake. (55 engines fitted. <i>See</i> Return No. 1, p. 26.)		1 and 2. Nil.	254,210 miles, with Automatic Vacuum and Newall's Hand Brake com- bined.
		Sept. 26	The 10.0 a.m. up train had a delay of 10 minutes at Fort George, leaking off and disconnecting brakes on vehicles in rear of Caledonian Company's brake-van No. 178, whose vacuum cylinder had become cracked.	

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Highland—cont.		Oct. 9	The 3.0 p.m. up train lost 8 minutes between Inverness and Forres, where Great Northern Company's saloon No. 3 was found to have its brake connection leaking, and the brake on that vehicle had to be disconnected.	
		" 26	The 3.0 p.m. up train had to be stopped at Kincaig owing to failure in brake rigging of No. 71 engine, in consequence of the dropping out of a split pin, causing 5 minutes delay.	
		No failures reported.		Newall's Continuous Hand Brake. 302,457 miles.
North British	Westinghouse Automatic Air Brake. (209 engines fitted. See Return No. 1, page 28.)		1. Nil.	2,931,023 miles.
			2. <i>Failure or partial failure to act under ordinary circumstances to stop a train when required.</i>	
		Aug. 24	Passenger train, Edinburgh to Musselburgh, collided with stop buffers at end of platform line, Musselburgh station, causing injury to passengers and damage to plant. Driver mis-managed application of air brake.	
			3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i>	
		July 1	Passenger train, Carlisle to Edinburgh, detained 3 minutes at Galashiels by hose-pipe bursting on Midland Railway horse-box No. 22. Failure of material.	
		" 1	Passenger train, Aberdeen to Burntisland, detained 3 minutes at Markinch by hose-pipe bursting on luggage van No. 172. Failure of material.	
		" 3	Passenger train, Edinburgh to Carlisle, detained 5 minutes at Edinburgh by hose-pipe bursting on Midland Scotch Joint Stock carriage No. 4. Failure of material.	
		" 4	Passenger train, Edinburgh to Hawick, detained 5 minutes between Tynehead and Falahill by hose-pipe bursting on van No. 169. Failure of material.	
		" 12	Passenger train, Innerleithen to Gretna, detained 3 minutes between Kershopefoot and Penton by hose-pipe bursting on third class carriage No. 841. Failure of material.	
		" 13	Passenger train, Hawick to Newcastle, detained 3 minutes between Hawick and Stobs by hose-pipe bursting on Midland Railway horse-box No. 126. Failure of material.	
		" 18	Passenger train, Grangemouth to Glasgow, detained 5 minutes between Grangemouth and Grahamston, by air-pipe breaking on engine No. 36. Failure of material.	
		" 19	Passenger train, Burntisland to Aberdeen, detained 5 minutes at Aberdeen ticket platform by air-pipe breaking on carriage truck No. 116. Failure of material.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
North British— <i>cont.</i>	Westinghouse Automatic Air Brake— <i>cont.</i>	July 20	Passenger train, Helensburgh to College, detained 6 minutes at Cardross by hose-pipe bursting on third class carriage No. 369. Failure of material.	
		" 21	Passenger train, Joppa to Edinburgh, detained 3 minutes at Portobello by hose-pipe bursting on third class carriage No. 542. Failure of material.	
		" 29	Passenger train, Edinburgh to Dunbar, detained 5 minutes near Morrisonhaven by main air-pipe breaking on engine No. 211. Failure of material.	
		Aug. 2	Passenger train, Edinburgh to Hawick, detained 5 minutes between Melrose and Ravenswood Junction by hose-pipe bursting on fish truck No. 6. Failure of material.	
		" 2	Passenger train, Carlisle to Edinburgh, detained 4 minutes between Newcastleton and Steele Road by hose-pipe bursting on Midland Railway saloon No. 464. Failure of material.	
		" 3	Passenger train, Edinburgh to Carlisle, detained 4 minutes between Hassendean and Hawick by hose-pipe bursting on carriage truck No. 213. Failure of material.	
		" 5	Passenger train, Carlisle to Edinburgh, detained 3 minutes between Penton and Kershopefoot by hose-pipe bursting on composite carriage No. 191. Failure of material.	
		" 8	Passenger train, Edinburgh to Port Edgar, detained 5 minutes in Haymarket Tunnel by hose-pipe bursting on third class carriage No. 83. Failure of material.	
		" 10	Passenger train, Hamilton to Hyndland, detained 3 minutes at Maryville by air pump failing on engine No. 587. Failure of machinery.	
		" 16	Passenger train, Aberdeen to Edinburgh, detained 6 minutes on journey by air-pipe breaking on engine No. 595. Failure of material.	
		" 16	Passenger train, Edinburgh to Perth, detained 5 minutes between Markinch and Falkland Road by hose-pipe bursting on third class carriage No. 500. Failure of material.	
		" 21	Passenger train, Edinburgh to Carlisle, detained 3 minutes at St. Boswells by air-pipe coming off between engine and tender No. 489. Failure of material.	
		" 28	Passenger train, Glasgow to Aberdeen, detained 3 minutes at Kincardine by hose-pipe bursting on composite carriage No. 218. Failure of material.	
		" 30	Passenger train, Aberdeen to Burntisland, detained 4 minutes between Port Letham and Newtonhill, by hose-pipe bursting on third class carriage No. 853. Failure of material.	
		" 31	Passenger train, Helensburgh to College, detained 5 minutes at Dalreoch Tunnel, by hose-pipe bursting on first class carriage No. 409. Failure of material.	
		Sept. 11	Passenger train, Glasgow to Dundee, detained 8 minutes at Dunfermline, by governor air-pipe breaking on engine No. 352. Failure of material.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
North British— <i>cont.</i>	Westinghouse Automatic Air Brake— <i>cont.</i>	Sept. 17	Passenger train, Edinburgh to Musselburgh, detained 7 minutes at Calton Tunnel, Edinburgh, by hose-pipe bursting on third class carriage No. 334. Failure of material.	
		" 24	Passenger train, Glasgow to Stirling, detained 6 minutes at Queen Street, by hose-pipe bursting on carriage truck No. 114. Failure of material.	
		" 30	Passenger train, Hawick to Edinburgh, detained 10 minutes between Hawick and Hassendean through defective triple-valve on third class carriage No. 741. Failure of workmanship.	
		Oct. 2	Passenger train, Hyndland to Manuel, detained 6 minutes at Shettleston by hose-pipe bursting on third class carriage No. 61. Failure of material.	
		" 2	Passenger train, Hamilton to Hyndland, detained 7 minutes between Shettleston and Hyndland by air-pump failing on engine No. 314. Failure of machinery.	
		" 6	Passenger train, Edinburgh to Carlisle, detained 5 minutes between Lyneside and Harker by hose-pipe bursting on sleeping carriage No. 25. Failure of material.	
		" 7	Passenger train, Aberdeen to Burntisland, detained 3 minutes near Broughty Ferry Junction by air-pipe breaking on engine No. 597. Failure of material.	
		" 10	Passenger train, Hamilton to Hyndland, detained 15 minutes on journey through triple-valve not working on engine No. 591. Failure of machinery.	
		" 10	Passenger train, Hyndland to South Airdrie, detained 9 minutes on journey through triple-valve not working on engine No. 591. Failure of machinery.	
		" 15	Passenger train, Dalmeny to Edinburgh, detained 3 minutes between Gogar and Corstorphine, by hose-pipe bursting on third class carriage No. 443. Failure of material.	
		" 18	Passenger train, Dunfermline to Glasgow, detained 4 minutes at Alloa by hose-pipe bursting on yeast van No. 32,605. Failure of material.	
		Nov. 2	Passenger train, Edinburgh to Dundee, detained 5 minutes between Burntisland and Kinghorn through air-pump failing on engine No. 595. Failure of machinery.	
		" 2	Passenger train, Grangemouth to Glasgow, detained 3 minutes near Grangemouth Junction by governor pipe failing on engine No. 36. Failure of material.	
		" 5	Passenger train, Aberdeen to Glasgow, detained 7 minutes on journey by air-pump failing on engine No. 598. Failure of machinery.	
		" 14	Passenger train, Kilbowie to Cowlares, detained 4 minutes at Yorkhill by hose-pipe bursting on third class carriage No. 527. Failure of material.	
		Dec. 6	Passenger train, Clydebank to College, detained 4 minutes on journey by double piston of air-brake failing on engine No. 109. Failure of machinery.	
		" 7	Passenger train, Hyndland to Hamilton, detained 8 minutes on journey by air-pump failing on engine No. 587. Failure of machinery.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
North British— <i>cont.</i>	Westinghouse Automatic Air Brake— <i>cont.</i>	Dec. 7	Passenger train, Clydebank to Hamilton, detained 4 minutes at Charing Cross by hose-pipe bursting on third class car- riage No. 119. Failure of material.	
		" 7	Passenger train, Hamilton to Hyndland, detained 3 minutes on journey by air- pump failing on engine No. 587. Failure of machinery.	
		" 7	Passenger train, Carlisle to Edinburgh, detained 6 minutes at Kilnknowe Junction by hose-pipe bursting on Mid- land Scotch Joint Stock composite carriage No. 24. Failure of material.	
		" 12	Passenger train, Edinburgh to Edinburgh (Suburban Railway), detained 4 minutes at Haymarket by air-pump failing on engine No. 424. Failure of machinery.	
		" 14	Passenger train, Grangemouth to Glasgow, detained 3 minutes on journey through piston rings of steam cylinder failing on engine No. 36. Failure of material.	
		" 17	Passenger train, Carlisle to Edinburgh, detained 3 minutes at Newcastleton by hose-pipe bursting on London and North-Western horse-box No. 485. Failure of material.	
		" 21	Passenger train, Newcastle to Hawick, detained 3 minutes between Deadwater and Saughtree by hose-pipe bursting on third class carriage No. 302. Failure of material.	
		" 28	Passenger train, Whifflet to Hamilton, detained 5 minutes at Parkhead through steam pipe of air-pump breaking on engine No. 480. Failure of material.	
		" 31	Passenger train, Carlisle to Edinburgh, detained 3 minutes between Carlisle and Harker by hose-pipe bursting on Midland Railway carriage No. 68. Failure of material.	
IRELAND.				
Belfast and Northern Counties.	- - -	No failures reported.	—	Vacuum Auto- matic Brake. 276,562 miles. Smith's Vacuum Brake. 26,663 miles.
Castlederg and Victoria Bridge Tramway Company.	- - -	No failures nor instance of delay reported.	—	Westinghouse Automatic Brake. 9,120 miles.
Cavan, Leitrim, and Roscommon Light Railway and Tram- way Company, Li- mited.	- - -	No failures reported.	—	Automatic Vacuum Brake. 53,137 miles.
Cork and Muskerry Light.	- - -	No failures reported.	—	34,938 miles.
Dublin, Wicklow, and Wexford.	- - -	No failures reported.	—	Simple Vacuum Brake. 411,426 miles.

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
Great Northern (Ireland).	- - -	No failures reported.	—	Smith's Vacuum Brake. 994,148 miles.
Great Southern and Western Railway, Ireland.	- - -	No failures reported.	—	Smith's Vacuum Brake. 967,375 $\frac{1}{4}$ miles.
			—	Automatic Vacuum Brake. 22,488 miles.
Midland Great Western Railway of Ireland.	- - -	No failures reported.	—	Smith's Vacuum Brake. 622,087 $\frac{1}{2}$ miles.
Sligo, Leitrim, and Northern Counties.	- - -	No failures reported.	—	Smith's Vacuum Brake. 15,132 miles.
Waterford and Limerick	- - -	No failures reported.	—	Automatic Vacuum Brake. 20,727 $\frac{1}{2}$ miles.
West Clare - - -	- - -	No failures reported.	—	29,421 miles.

No. 3.

RETURN for the Six Months ending on the 31st day of December 1889, of the number of miles run by Passenger Trains not fitted with CONTINUOUS BRAKES on Railways.

Name of Railway Company.	Name of Railway worked by Company on which Passenger Train ran without Continuous Brake.	Number of Miles run by Passenger Trains without Continuous Brakes.
ENGLAND AND WALES.		
Aylesbury and Buckingham -	Nil.	—
Bishop's Castle - - -	Bishop's Castle - - -	12,474
Brecon and Merthyr Tydfil Junction	Nil.	—
Bristol Port Railway and Pier -	Bristol Port Railway and Pier - -	22,146
Cambrian - - -	Cambrian and Mid Wales Railways -	376,814
Cheshire Lines Committee - -	Cheshire Lines - - -	—
Colne Valley and Halstead - -	Colne Valley and Halstead - - -	Mixed trains 23,120
Corris - - -	Corris - - -	6,820
East and West Junction - -	East and West Junction - - -	9,897
Eastern and Midlands - -	Branch Line Melton to Yarmouth - -	44,934
Festiniog - - -	Festiniog - - -	27,094
Furness - - -	Furness Whitehaven, Cleator, and Egremont Cleator and Workington Junction - -	} 83,984
Garstang and Knot End - -	Garstang and Knot End - - -	
Great Eastern - - -	Great Eastern, Great Northern and Great Eastern Joint, East London (Great Eastern, &c.), Midland and Great Eastern, Mellis and Eye, Brightlingsea, Lynn and Hunstanton.	51,138
Great Northern - - -	Great Northern - - -	5,198
Great Western - - -	Main and Branch lines and lines worked by the Great Western Railway Company.	145,890
Hull, Barnsley, and West Riding Junction Railway and Dock.	Hull, Barnsley, and West Riding Junction -	1,985
Isle of Wight - - -	Isle of Wight Railway Brading Harbour Railway - - Joint South-Western and Brighton Companies' Ryde Pier Railway.	55,308 6,320 5,580
	Total -	<u>67,208</u>
Isle of Wight Central - -	Isle of Wight Central - - -	61,877

Name of Railway Company.	Name of Railway worked by Company on which Passenger Train ran without Continuous Brake.	Number of Miles run by Passenger Trains without Continuous Brakes.
Lancashire and Yorkshire - -	Nil.	—
Liskeard and Caradon - -	Liskeard and Caradon - - -	249
London and North-Western -	London and North-Western main lines - " " " " branch lines - London and North-Western and Great Western Joint. Whitehaven, Cleator, and Egremont - Cockermouth, Keswick, and Penrith Railway }	13,002
London and South-Western -	London and South-Western Railway and Branches.	20,446
London, Brighton, and South Coast	London, Brighton, and South Coast - -	7,046
London, Chatham, and Dover -	London, Chatham, and Dover, and Dover and Deal.	1,242,302
Londonderry (Seaham and Sunderland)	The Londonderry Railway, between Seaham and Sunderland.	—
London, Tilbury, and Southend -	Nil.	—
Manchester and Milford - -	Manchester and Milford - - -	61,772
Manchester, Sheffield, and Lincolnshire.	Manchester, Sheffield, and Lincolnshire - Sheffield and Midland Committee - Oldham, Ashton, and Guide Bridge Committee. Macclesfield Committee - - - }	6,399
Manchester, South Junction, and Altrincham.	Nil.	—
Maryport and Carlisle - -	Maryport and Carlisle Main Line, Derwent Branch, and Bolton Branch.	95,773
Mawddwy - - -	Mawddwy - - -	9,058
Mersey - - -	Nil.	—
Metropolitan - - -	Nil.	—
Metropolitan District - -	Nil.	—
Midland - - -	Midland - - -	387,707
Midland and South-Western Junction	Midland and South-Western Junction -	Passenger trains 51,762 Mixed trains 19,466 Total - 71,228
Neath and Brecon - - -	Neath Branch only - - -	Passenger trains 235 Mixed trains 12,750 Total - 12,985
North-Eastern - - -	North-Eastern : Ordinary Trains - -	581
North London - - -	Nil.	—
North Staffordshire - - -	North Staffordshire - - -	152,311
North Wales Narrow Gauge -	North Wales Narrow Gauge - -	15,937

Name of Railway Company.	Name of Railway worked by Company on which Passenger Train ran without Continuous Brake.	Number of Miles run by Passenger Trains without Continuous Brakes.
Pembroke and Tenby - - -	Pembroke and Tenby - - -	46,668
Pontypridd, Caerphilly, and Newport	Nil.	—
Ravenglass and Eskdale - - -	Ravenglass and Eskdale - - -	Passenger trains 6,894 Mixed trains 3,430 Total - <u>10,324</u>
Rhondda and Swansea Bay - - -	Nil.	—
Rhymney - - - - -	Nil.	—
Seacombe, Hoylake, and Deeside - - -	Seacombe, Hoylake, and Deeside - - -	6 $\frac{1}{4}$
Severn and Wye and Severn Bridge	Nil.	—
Somerset Joint Committee - - -	Somerset and Dorset Joint line - - -	3,952
South-Eastern - - - - -	South-Eastern and its Branches - - -	286,892
Southwold - - - - -	Southwold - - - - -	16,468
Taff Vale - - - - -	Taff Vale - - - - -	1,021
Talylyn - - - - -	Talylyn - - - - -	6,280
West Lancashire - - - - -	West Lancashire and Liverpool, Southport, } and Preston Junction - - - }	5,533
West Somerset Mineral - - -	West Somerset Mineral - - -	3,744
Wrexham, Mold, and Connah's Quay	Wrexham, Mold, and Connah's Quay -	Mixed trains 16,996 $\frac{1}{2}$
SCOTLAND.		
Ayrshire and Wigtownshire - - -	Ayrshire and Wigtownshire - - -	24,016
Caledonian - - - - -	Caledonian - - - - - Callander and Oban - - - - - Greenock and Wemyss Bay - - - - - Cathcart - - - - - Killin - - - - - Portpatrick and Wigtownshire - - - - - Kilsyth and Bonnybridge - - - - -	83,438 95 20 6 4,458 735 464 Total - <u>89,216</u>
Glasgow and South-Western - - -	Glasgow and South-Western, Glasgow and Paisley, Glasgow, Barrhead and Kilmarnock, and Portpatrick and Wigtownshire Railways.	69,735
Glasgow, Barrhead, and Kilmarnock Joint.	Beith Branch - - - - -	16,165

Name of Railway Company.	Name of Railway worked by Company on which Passenger Train ran without Continuous Brake.	Number of Miles run by Passenger Trains without Continuous Brakes.
Great North of Scotland - - -	Great North of Scotland - - -	Passenger trains - 233,380 Mixed trains 129,717 $\frac{1}{4}$ <u>Total - 363,097</u>
Highland - - -	Nil.	—
North British - - -	North British - - - Glasgow, Yoker, and Clydebank - - - Blane Valley - - - Strathendrick and Aberfoyle - - - Anstruther and St. Andrews - - -	} 410,726
Portpatrick and Wigtownshire Joint Committee.	- - - - -	32,722
IRELAND.		
Ballycastle - - -	Ballycastle - - -	19,662
Belfast and County Down - -	Belfast and County Down - - -	200,901
Belfast and Northern Counties -	Belfast and Northern Counties, Carrickfergus and Larne, Derry Central, Draperstown and Limavady, and Dungiven.	115,176
Bessbrook and Newry - -	Bessbrook and Newry Tramway - -	10,290
Castlederg and Victoria Bridge -	Nil.	—
Cavan, Leitrim, and Roscommon Light Railway and Tramway.	Nil.	—
Cork, Bandon, and South Coast -	Cork and Bandon - - - Ilen Valley - - - Bantry Extension - - - Clonakilty Extension - - -	61,158 $\frac{1}{2}$ 17,873 12,307 $\frac{1}{2}$ 7,191 <u>Total - 98,530</u>
Cork and Macroom Direct -	Cork and Macroom Direct - - -	38,954
Cork and Muskerry Light -	Nil.	—
Cork, Blackrock, and Passage -	Cork, Blackrock, and Passage - -	33,742
Dublin, Wicklow, and Wexford -	Dublin, Wicklow, and Wexford - -	30,198
Dundalk, Newry, and Greenore -	Dundalk, Newry, and Greenore - -	35,990
Finn Valley - - -	Finn Valley - - -	16,429
Great Northern (Ireland) - -	Great Northern (Ireland) - - -	28,255
Great Southern and Western -	Nil.	—
Londonderry and Lough Swilly -	Londonderry and Lough Swilly and Letterkenny.	48,365

Name of Railway Company.	Name of Railway worked by Company on which Passenger Train ran without Continuous Brake.	Number of Miles run by Passenger Trains without Continuous Brakes.
Midland Great Western - - -	Midland Great Western, Great Northern and Western, Dublin and Meath, and Navan and Kingscourt.	46,465
Sligo, Leitrim, and Northern Counties	Sligo, Leitrim, and Northern Counties -	Mixed trains 36,240
Waterford and Central Ireland -	Waterford and Central Ireland and Kilkenny Junction and Central Ireland.	73,965
Waterford and Limerick - - -	Limerick and Kerry - - - - } Athenry and Ennis - - - - } Athenry and Tuam - - - - } Southern - - - - - } Rathkeale and Newcastle Junction - - } Tralee and Fenit - - - - - }	349,795 $\frac{3}{4}$
Waterford and Tramore - - -	Waterford and Tramore - - - -	21,795
Waterford, Dungarvan, and Lismore	Waterford, Dungarvan, and Lismore - -	28,838
West Carbery - - - - -	Nil.	60 miles per day
West Clare - - - - -	Nil.	—
West Donegal - - - - -	West Donegal - - - - -	22,147

APPENDIX.

STATEMENT of CASES in which ACCIDENTS have been PREVENTED by the use of the
WESTINGHOUSE CONTINUOUS AUTOMATIC AIR BRAKE during the six months
ending the 31st December 1889.

Date.	Train.	Particulars.
July 1889.		
4	9.45 a.m. Brighton to Victoria.	When entering Victoria station the driver observed the points were set for No. 5 road. He immediately applied the brake, and succeeded in stopping about a carriage length from a Hastings train which was standing there. (The signal was off for No. 6 road, on which this train usually runs.)
Sept. 14	8.10 a.m. Portsmouth to London.	When approaching a crossing near Farlington Junction the driver observed a horse and cart crossing the line. He sounded the whistle and applied the brake, by which means he was able to stop in time to prevent running into them.
Oct. 21	6.7 p.m. East Croydon to London Bridge.	The driver observed the signals at Norwood Junction South box were "off," but received a red hand-signal from goods foreman Russell (who was on the up side), and the fixed signals were put to danger, when he observed a South-Eastern Company's train passing through the station. By the aid of the brake the driver was enabled to prevent running in collision with the South-Eastern train.
Nov. 4	11.43 a.m. Eastbourne to Hastings.	When between Stonecross Junction and Pevensey the driver observed some foxhounds on the line; he therefore applied the brake, by which means he was able to stop the train before running over any of them.
" 4	4.55 p.m. Portsmouth to London.	When running between Emsworth and Bosham the driver observed some goats on the line; he therefore applied the brake, by which means he was able to stop the train before running over any of them.
" 9	11.25 a.m. Lewis to Seaford.	When about half a mile east of Southerham Junction the driver observed some hounds on the line; he at once applied the brake, by which means he was able to stop the train before running over any of them.
" 23	7.35 p.m. Victoria to South Croydon.	When approaching New Wandsworth, seeing that the distant-signal was at danger, the driver sounded the engine whistle, and when he was in view of the rear signal he found that and the repeater "off," and the fogman showing a white light. On reaching the signal-box, however, he saw the red light of an engine (No. 30, "Camberwell") in front of him. He at once applied the brake, by which means he was enabled to stop the train within two yards of the light engine, thus preventing what might have been a serious accident. The driver of the light engine, on seeing the train approaching, ran his engine ahead.
Dec. 12	12.5 p.m. Victoria to London Bridge.	On approaching West Norwood station the driver observed a girl jump from the up platform and walk across to the down platform; he immediately applied the brake, by which means he was able to stop about half-way along the platform, and so enabled the girl to get safely over.

LONDON AND NORTH-WESTERN RAILWAY.

Continuous Brake Failures and Irregularities.

		Half year ending			
		June 1887.	December 1887.	June 1888.	December 1888.
Clause 1. (Failure of brake when required to stop trains for the purpose of preventing accidents.)	Auto. Vacuum	Nil	Nil	Nil	Nil
	Simple „ -	Nil	Nil	Nil	Nil
	Chain - - -	Nil	Nil	Nil	Nil
Clause 2. (Failure of brake when required for the ordinary stoppages of trains.)	Auto. Vacuum	Nil	Nil	1	Nil
	Simple „ -	4	8	6	7
	Chain - - -	3	Nil	1	Nil
Clause 3. (Delays to trains owing to irregular working, &c. of brakes.)	Auto. Vacuum	Nil	Nil	14	41
	Simple „ -	40	33	34	29
	Chain - - -	3	2	2	3

LONDON, BRIGHTON, AND SOUTH COAST RAILWAY.

STATEMENT showing the NUMBER of TIMES the WESTINGHOUSE CONTINUOUS AUTOMATIC AIR BRAKE has been used on this railway on two particular days during the six months ending 31st December 1889.

Wednesday, October 9th.

With passenger trains	14,427
With engines only -	7,869
Total	<u>22,296</u>
Number of booked stoppages -	<u>9,253</u>

Tuesday, December 10th.

With passenger trains	14,706
With engines only -	8,099
Total	<u>22,805</u>
Number of booked stoppages -	<u>9,312</u>

2.—RULES and REGULATIONS relating to CONTINUOUS BRAKES.

CAMBRIAN RAILWAYS.

Circular No. 206.

INSTRUCTIONS FOR WORKING THE VACUUM BRAKE.

1. Certain of the carriages and vans at present working between Whitchurch and Aberystwith, and to a limited extent on other parts of the line also, are fitted with a Non-automatic Vacuum Brake, *under the control of the engine-driver only*. These vans are also fitted with an automatic arrangement, held off by a small vacuum to be constantly maintained in the train pipe when the engine has been coupled up. Should this vacuum not be maintained, the valve in the van will drop, the bell ring, and the van brake be instantly applied. The carriage examiners will be responsible for winding up the bell when the train is marshalled, and the guard for seeing it kept wound up on the journey.

2. The brake will eventually be fitted to all the Company's stock, but until then, some of the carriages will be fitted with train pipes only, and when it is necessary to run such carriages in Vacuum Brake trains, they must as far as possible be placed *behind carriages fitted with the brake and before the rear van*.

3. The person whose duty it is to couple up the brake pipes previous to the starting of a train, must as soon as the connexions are complete inform the driver, who will then raise the vacuum, by the use of the ejector. Porters and others are cautioned that in passing between vehicles they must not step upon the brake pipes.

4. Before giving the signal for the train to start, the guard must satisfy himself that the valve in his van has been raised by the vacuum, that the bell has ceased to ring, the small catch dropped out of gear, and that the gauge shows not less than 15 inches of vacuum. Should the gauge not show that amount of vacuum, the guard must hold up steadily the white flag to the driver, waving it when the necessary vacuum is reached. At night the same signals are to be given with a white light.

5. It will be the duty of the guard before starting, and at places where engines are changed, to inform the driver the number of vehicles on the train fitted with the Vacuum Brake complete, as well as the number fitted with the pipe only.

6. The brakes throughout the train being under the control of the driver, the use of the hand brake in the vans is not required for ordinary stops for which the use of the Vacuum Brake is permitted (*see paragraph 14*), but guards must at all times be prepared to apply the hand brake immediately on its being called for by the driver's whistle.

7. If at any time during a journey the Automatic Brake in the van goes on, and the bell rings, the guard must at once endeavour to ascertain the cause, which may arise from the train breaking in two, failure of some part of the brake apparatus, or neglect on the part of the driver to maintain the small vacuum. If the guard is satisfied that the application of the brake has not arisen from the train breaking loose, and can perceive nothing wrong with the train which would require it to be stopped, he must put the Automatic Brake out of gear by pulling up the spindle of the valve, and hooking in the catch, to prevent the brake blocks rubbing the wheels of the van to the next stopping place, where the guard must call the driver's attention to the matter.

8. The guards of all trains fitted with the Vacuum Brake must insert on their reports the words "Continuous Brake Train," and if only for part of the journey, between what points, with full particulars of

any defects which may occur in the working of the brake during the journey, including its automatic action under the circumstances described in paragraph 7.

9. To enable a van to be moved when the engine is detached from the train, the Automatic Brake can be held off by pulling up the spindle of the valve, and hooking in the catch. The valve must be so hooked up on coming to a stand at the end of a journey. The brake pipes of carriages standing in sidings must not be left hanging loose, but fixed to the plug.

10. The Vacuum Brake stock of the following Railway Companies may be placed with Cambrian Brake stock in making up Continuous Brake trains, subject to its being dealt with as provided in the second part of par. 12, viz. :—

London and North-Western.

North Stafford.

Great Northern.

Manchester, Sheffield, and Lincolnshire.

Manchester South Junction and Altrincham.

Cheshire Lines.

Caledonian.

The vehicles of any other company fitted with a Vacuum Brake must when possible be placed in the rear of Cambrian Continuous Brake trains, *and the pipes not coupled up*, but if it is absolutely necessary to marshal them in such trains, they are to be placed as far back as possible, the pipes left uncoupled, and the Vacuum Brake used only on the vehicles between them and the engine. If, however, such foreign vehicles are fitted with an apparatus for cutting off the brake cylinder from the train pipe, and the brake has been put out of gear, the pipes may be coupled up. Horse boxes and other vehicles *fitted with train pipes only* may be marshalled in the trains and the pipes coupled.

11. When any considerable number of vehicles not fitted with the Vacuum Brake, or having pipes only, are attached to a train fitted with such brake, the guard in the rear van must immediately, upon the Vacuum Brake being applied by the driver, apply his hand brake, and keep it tightly on, either until the train has come to a stand, or the driver has taken off the Vacuum Brake, and is again going forward. This action is necessary to prevent the rebound of the carriages which may occur with trains composed of vehicles only partially fitted with Continuous Brakes.

12. When a Cambrian carriage fitted with the brake is sent forward to the Great Western or Midland lines, the connexion between the train pipe and the brake cylinder must be cut off by means of the handle painted red, placed at each side of the carriage, close under the frame. This handle forms part of a rod extending across the carriage, and provided at each end with three notches. When it is desired to disconnect the brake, either for the purpose of sending the carriage to the lines mentioned, or if, when running, the brake is found defective, the handle must be pulled or pushed into one of the end notches. When right for working, the handle will stand in the centre notch, level with the side of the carriage frame, and examiners must see that the handle is placed in this position when carriages are returned from a foreign line, or after having undergone repairs.

Some of the London and North-Western Company's carriages are now fitted with the *Automatic Vacuum Brake*, and when Cambrian carriages are returned from that Company's line, special care must be taken that the handle is put back to the centre notch. For the same reason the connecting handle on London and North-Western carriages fitted with the Automatic arrangement must be moved to the position marked "Simple" before the carriages are placed in Cambrian Vacuum Brake trains.

13. Enginemen must be careful not to put on the Vacuum Brake too suddenly, and drivers of all down trains must test the brake before commencing the descent of Talerddig incline. Special instructions to enginemen will be issued by the Locomotive Superintendent.

14. The Vacuum Brake is *not to be used except on emergency* at—

- (a) Terminal stations.
- (b) Junctions between single and double line.
- (c) Stations on single line where other trains are to be passed or crossed.
- (d) *Nor at any station*, unless the driver is satisfied at the time of shutting off steam that there is an obstruction on the line which he could not stop short of by the use of the hand brakes.

Station-masters are to report any breach of this regulation which may come under their notice.

In all the foregoing cases steam must be shut off, and the speed reduced in the same manner as if the train were fitted with the ordinary hand brakes only.

Please acknowledge receipt on form annexed.

J. CONACHER,

Oswestry, 15th June 1888.

Secretary.

EASTERN AND MIDLANDS RAILWAY.

NOTICE TO ENGINEMEN AND FIREMEN.

Engines Nos. 32 to 35 inclusive have been fitted, in addition to the Westinghouse brake for engine, with a combination ejector for working simple or automatic vacuum brake on the foreign excursion trains.

The following regulations must be observed :—

Testing the Brake before starting.

1. Before starting with any train the engineman must ascertain whether the train is fitted with the simple or automatic vacuum or Westinghouse; he must also satisfy himself that the brake-pipe between his engine and the train has been properly coupled up, and he must then test the brake to see that it is in good working order.

Simple Vacuum.

2. To apply the brake the handle on the combination ejector must be pushed *from* the driver, and to release the brake pulled to him.

Automatic Vacuum.

3. To apply the brake the handle on the combination ejector must be pulled *towards* the driver, and to release the brake pushed from him.

4. Before starting the driver must see that the gauge indicates at least 18 inches of vacuum, and that it be maintained during the journey, and 70 lbs. of air pressure indicated by the Westinghouse gauge.

5. At any station where there is a likelihood of vehicles being put on or taken off, the vacuum in the continuous pipe must be destroyed by opening the application valve on the engine so that there may be no delay in coupling or uncoupling.

Application of the Brake when running.

6. Referring to No. 293 of the Company's rules respecting the speed of trains when entering terminal stations. Enginemen working trains fitted with continuous brakes are hereby informed that they must not run at a high rate of speed close up to the stations at which they have to stop and suddenly apply the brakes at full power; but in all cases of ordinary stoppages they are to reduce the speed of their trains when approaching stations so as to enable

them to stop at the platforms with the application of a moderate amount of brake power only.

Enginemen must run at a moderate speed through curves, crossings, facing-points, junctions, and must reduce speed before arriving at such places so that the brakes may not be hard on when actually running on them.

Testing the Brake.

7. In addition to testing the brake before starting, as in paragraph 1, enginemen must satisfy themselves before passing the distant-signal of any station at which the train has to stop or reduce speed, that the brake is in working order, and on passing the distant-signal of any terminal station the brake must be applied and speed of train reduced by it. The train must not be allowed to travel between the distant-signal of any terminal station at a higher rate of speed than will admit of its being stopped at the entrance of the station by the application of the ordinary hand brakes only.

Unless the brake is working properly when tested, the engineman must whistle for the guards' hand brakes, stop the train and inform the guards the continuous brake is out of order, and the hand brakes must be relied on for working the train.

8. Any case of the continuous brake connexion being cut off by a "dummy" being placed next the engine must be reported on the driver's return.

9. The vacuum brake will be worked under the rules of the Vacuum Brake Company, copies of which will be issued to drivers.

The attention of all enginemen is specially directed to these instructions, which must be strictly adhered to.

WILLIAM MARRIOTT,

Melton Constable,
May, 1888.

Engineer and Loco. Supt.

THE FURNESS RAILWAYS.

INSTRUCTIONS TO ENGINEMEN, GUARDS, CARRIAGE EXAMINERS, and all others concerned, as to the use of the CONTINUOUS AUTOMATIC VACUUM BRAKE.

Description.

1. The Automatic Vacuum Brake stops the train by the application of the brake blocks to the tyres of the carriages in the same way as the ordinary screw brake, but the levers which apply the blocks, instead of being worked by a screw, are worked by a piston actuated by atmospheric pressure in a cylinder.

2. The following are the principal parts of the apparatus on the carriages:—

The Cylinder.

The Piston.

The Ball Valve.

The Main Train Pipe.

The Flexible Branch Pipe, connecting bottom of Cylinder to Train Pipe.

The Vacuum Chamber, connected to top of Cylinder.

The Release Lever, or Ball Valve, connected to each side of carriage underframe by wire cord.

The Dummy.

The "Universal" Hose and Coupling.

3. By means of the ejector placed upon the engine the air is drawn out of the main train pipe, and from the top and bottom sides of the piston in the cylinder through the flexible branch pipe and through the ball valve from the vacuum chamber, so that in running a vacuum should be maintained throughout the system of 20 inches, and certainly not less than 15 inches.

4. *Brake on.*—The brake is operated either by the brake valve on the engine in connection with the main train pipe or by the guard pressing downwards the lever of the van valve, which is likewise connected with the main train pipe. The effect of this is to admit air to the train pipe, and thence through the flexible branch pipe to the bottom side of piston, thereby applying the brakes, the top side and vacuum

chamber maintaining the vacuum through the action of the ball valve, which closes immediately air is admitted to the train pipe.

On a full application of the brake—from whatever cause—all the van valves in the train will open automatically and admit air through each van valve simultaneously, thus obtaining a more rapid application of the brake.

5. In the event of a train parting, the "Universal" hose and couplings will, without damage, become detached, and the brakes will immediately apply themselves.

6. *Brake off.*—In order to release the brakes the driver must move the lever of brake valve on the engine to the position marked "off," when the ejector will at once re-create the vacuum throughout the system as before described, thus allowing the piston to fall by its own weight and thereby release the brakes.

7. To release the brakes on any carriages that require to be shunted, in the event of the engine not having done so before being detached from the train, the ball valve must be opened on those carriages by means of a small wire cord which is placed on either side of the carriage underframe. This admits air to the vacuum chamber and top side of piston, thus restoring equilibrium on both sides of piston, under which conditions the brakes fall off by their own weight.

8. A dummy is provided to which the rear coupling must always be attached.

Instructions for working.

9. In the formation of trains, the coaches fitted with the Automatic Vacuum Brake must be placed together next to the engine, so that the Automatic Vacuum Brake may be used.

10. The brake can be applied throughout the whole of the vehicles fitted with the apparatus by the engine-man from the engine or by the guard from his van, as before described; but in order that this may be done, it is imperative that the flexible connections between each carriage and between the engine and the train be properly coupled up; also that the flexible connection on the last vehicle fitted with the brake be placed on the dummy provided for that purpose described in clause 8.

11. The brake must be used for all ordinary stops, but must not be applied with full force except in cases of emergency. For ordinary stops, and particularly when approaching junctions where timed to stop, enginemen must be careful to reduce the speed, so that a moderate application of the brake will suffice.

12. Guards must not apply the Automatic Vacuum Brake except in cases of absolute necessity, and whenever they do so a full and special report of the circumstances must be made, and the occurrence must also be notified on their reports; they must at all times be ready to apply the hand brake should the driver call for assistance.

13. *Guards.*—The guard, before giving the signal to start at the commencement of the journey, and at stations where any of the flexible pipes have been coupled or uncoupled, must ascertain and inform the engineman—

- (a) That all the flexible pipes are properly coupled up continuously throughout the train, and that the flexible pipe of the last brake vehicle is properly placed upon the dummy.
- (b) The number of vehicles in the train fitted with the brake the flexible pipes of which are coupled up to the engine.
- (c) The number of inches of vacuum indicated by the gauge in the rear van.

14. *Enginemen.*—The enginemen before starting at the commencement of the journey, and also at stations where any of the flexible pipes have been coupled or uncoupled, must ascertain from the guard the number of vehicles in the train fitted with

the brake the flexible pipes of which are coupled up to the engine, and the number of inches of vacuum shown by the gauge in the rear van.

He must also be careful to see—

- (a.) That the vacuum pipe of his engine is properly coupled up to the leading vehicle in the train.
- (b.) The number of inches of vacuum indicated by the gauge on the engine.

15. If from any cause the engineman is unable to obtain at least 15 inches of vacuum, he must inform the guards of the fact, and the train must be worked forward with the ordinary hand and steam brakes and he must report on his daily return when he is not able to obtain 20 inches.

16. When the pipes between the engine and train are disconnected, the couplings must be placed on the dummies provided for that purpose. Detached carriages must always have the hose couplings placed on the dummies.

17. At any station where the driver is informed that vehicles are to be attached to or taken off the train, the vacuum in the main train pipe must be destroyed, as described in clause No. 7, so that there may be no delay in coupling or uncoupling.

18. In the case of vans fitted with the combined hand and vacuum brake, the guard must see before starting that the hand brake is screwed full "off."

19. When vehicles are supplied with connecting pipes only, they must be considered as vehicles without the brake, but the brake connections must be made as described in clause 10.

20. When vehicles not fitted with a continuous brake or having connecting pipes only, are attached to a train fitted with such brake, or to an engine having the brake on the engine wheels as well as the tender wheels, *the guard in the rear van must, immediately upon the continuous or engine brake being applied by the driver, apply his hand brake, and keep it tightly on, either until the train has come to a stand or the driver has taken off his brake, and is again going forward, as the case may be.* This arrangement is necessary to prevent the rebound of the carriages and possible breaking of the drawbars which may occur when a powerful brake is applied to the front portion of the train only.

INSTRUCTIONS FOR TESTING.

21. It is the duty of the enginemen in every instance, *before taking their engines out of the shed*, to test the brakes on both engine and tender, as directed below, so as to satisfy themselves that they are in efficient working order.

22. **AUTOMATIC VACUUM BRAKE.**—The coupling at the back of the tender, when not connected to the train pipe, must always be placed on the iron socket fixed for that purpose to the tender pipe. This socket is perforated so that a vacuum cannot be obtained by the small ejector, nor retained after the large ejector is shut off; thus, should a porter or other person neglect to couple the pipe to the train, the error will at once show itself on the vacuum gauge.

23. To properly test the action of the ejectors and tightness of the joints, &c., each engine will be supplied with an iron plug, which is to be fixed in the above-mentioned socket. The face of the coupling at the end of the flexible pipe must then be securely placed on this plug by the fireman, after which each ejector can in turn be tried by the engineman, who must note also the time that the vacuum remains in the pipes after the ejectors are shut. Should the fall of the vacuum be very rapid, the joints must at once be examined, in order to discover signs of leakage. The plug when not in use must be kept in the engine tool box.

24. In order to draw out any water that may have accumulated in the engine pipes, the engineman

must take the hose pipe off the iron socket at the back of the tender and use the large ejector freely. All drain valves and pipes in connection with the brake apparatus must be free and in working order.

25. STEAM BRAKES.—When engines are fitted with these, whether in addition to the brake before mentioned or otherwise, they must be tested with full steam pressure.

26. Enginemen must always test the continuous brakes, to satisfy themselves that they are in good working order, after the engines are coupled to the trains and immediately before starting.

By order.

Barrow, July 30th, 1884.

GREAT NORTHERN RAILWAY.

VACUUM BRAKES.

Instructions for working the Vacuum Brake either as a Simple or Automatic Brake when the Carriages, &c. are fitted with the Combination Brake or the Automatic Brake only.

The attention of station masters, foremen, guards, porters and others is drawn to the arrangement under which carriages and other vehicles fitted with the simple or automatic apparatus can be used, either for the application of the simple or automatic brake, the arrangement consisting of a short lever at each end or side of the carriage or other vehicle, having a quadrant with the letters "Auto." at one end, and "Simp." at the other, indicating automatic or simple.

When carriages or other vehicles are attached to an automatic train, the lever must be turned to "Auto.," and when to a simple brake train to "Simp." When the brake is out of order the lever should be set straight up and down, cutting off the brake connections.

To release the brake from any carriage, &c., pull the cord, the position of which is indicated by a red star on each side of the vehicle. The brake can be applied throughout the whole of the vehicles fitted with the apparatus by the engineman from the engine, or by the guard from his van, but in order that this may be done it is imperative that the flexible connections between each vehicle and between the engine and the train shall be properly coupled together, and the flexible pipe at the rear end be put carefully on the plug.

Special Instructions to Guards.

Guards must see that the gauge in their vans indicates 18 inches of vacuum before starting, and they must at all times be ready to apply the hand brake should the driver call by whistle for its assistance, or when approaching a stopping station.

When carriages are to be slipped the pipes must be put upon the plug, and the cord pulled to release the brake. The carriage, after being slipped, must be brought to a stand with the hand brake.

Special Instructions to Engine Drivers.

Before starting the driver must see that the gauge indicates at least 18 inches of vacuum, and that it be maintained during the journey. The vacuum is created by admitting steam to the small ejector. To release the brake close the application valve, when the brake-blocks will fall from the wheels.

When the automatic vacuum brake is to be used for the ordinary stoppage of trains, it must be done by the engineman opening the application valve on the engine gradually, not suddenly or with full force, except in cases of emergency.

At any station where there is likelihood of vehicles being put on or taken off, the vacuum in the continuous pipe must be destroyed by opening the application valve on the engine so that there may be no delay in coupling or uncoupling.

General Instructions.

All passenger trains must be fitted with a continuous brake.

When a train, which ordinarily consists of vehicles fitted with a continuous brake, is not so fitted throughout, the front half, at least, must be fitted and worked with a continuous brake.

The working of these brakes by the engineman will not relieve guards from any responsibility. They must keep a good look-out, and be prepared to apply hand brakes should necessity arise.

Station-masters, inspectors, and foremen must select experienced men to couple together the pipes of vehicles fitted with any air brake, and must carefully examine the couplings before starting train. They must give special attention to the proper coupling of air brake pipes, and make such arrangements as will ensure these pipes being cared for, and not improperly used.

Guards must see that pipes of air brakes are properly coupled together before starting, and whenever any engine or vehicle is attached or detached; and they must, whenever the train stops at a station, examine the pipes and couplings.

In vehicles fitted with vacuum and also with Westinghouse brake pipes, the latter must, when such is practicable, be above the vacuum pipes.

The communication cord must be attached to lever of brake of engine. The cord must be given by platform porter to engineman or fireman, who must attach it to brake lever.

When vehicles fitted with continuous air brake are left in sidings or at stations, the brake pipes of each vehicle must be coupled together, and not left hanging loose. Porters and others are cautioned that in passing between vehicles they must not step upon the brake pipes, nor interfere with or injure the connections.

Guards must report specially and also enter on their journals full particulars of any defect, failure, or unsatisfactory working of the brake of their train, or any portion of the fittings, couplings, &c., whether vacuum, Westinghouse, hand, or other brake.

The head guard of a train provided with a continuous brake must, before starting train, and at places where engines are changed, inform the engine driver the number of vehicles there are on the train, and upon how many of them the brake can be applied; and when any vehicles are attached or detached on journey, the engine driver must be advised, and told whether the attaching or detaching of such vehicles will interfere with working of brake on whole or a portion of train, and, if the latter, to what extent.

The engine driver of a train provided with a continuous brake must, before starting, and at places where engines are changed, ascertain from the head guard the number of vehicles there are on the train, and upon how many of them the brake can be applied, and, when any vehicles are attached or detached on journey, whether the attaching or detaching of such vehicles will interfere with working of brake, and, if so, to what extent.

Terminal stations must be approached cautiously, and guards must apply their hand brakes, should there be any reason to suppose the engineman has not the train well in hand, or that there is the least risk of not being able to stop at entrance to station. Guards must have their hands on their hand brakes when passing the distant signal of a terminal station, and must so remain and be ready to apply brakes until train is stopped at station.

Enginemen must test the brake before starting, at each station where engine is changed, and again at each station where any vehicle is attached or detached. They must satisfy themselves, before passing the distant-signal of any station at which the train has to stop or reduce speed, that the brake is in good working order, and on passing the distant-signal of any terminal station the brake must be applied and speed of train reduced by it. The train must not be allowed to

travel between the distant-signal and any terminal station at a higher rate of speed than will admit of its being stopped at entrance to station by the application of the ordinary hand brakes only. Enginemen must from time to time, and whenever they are likely to have to make use of the brake, test its working, and must not at any time run more than 20 miles without trying the brake. They must not pass the distant-signal of any important station, such as Hatfield, Hitchin, Peterboro', Retford, Doncaster, &c., nor go down any incline, without trying the brake, and must in each case satisfy themselves it is in good working order. Unless the brake is working properly when thus tried, the engineman must whistle for the guards' hand brakes, stop the train, and inform the guards the continuous brake is out of order, and the hand brakes must be relied upon for working the train. Special care must then be taken in approaching stations at which the train has to stop.

The brake must also be tested on—

All up trains when passing Holloway station (London),

All down trains when passing Meadow Lane junction (Nottingham),

All down trains when passing Hammerton Street junction (Bradford),

All down trains when passing the goods yard junction, Dewsbury.

All down trains when passing the junction with Midland Railway, Keighley.

All down trains when passing the down distant-signal of the Midland junction at Shipley.

A chain with hook is attached at each end of the several vehicles composing the coaching stock. This hook must be put round the rod of the screw coupling, immediately above the ball, to prevent the latter touching the brake pipes. Station masters, guards, and others must report any case of the suspended weight of a screw coupling being found above side chain or brake pipe.

Guards must inform enginemen of the number of carriages on their train which are not fitted with brake apparatus, but with through pipes only.

Vacuum brake pipe connections, when not in use, must be securely placed on the studs provided for the purpose.

Circular No. 5887a is cancelled.

P. STIRLING,
Locomotive Engineer.

FRANCIS P. COCKSHOTT,
Superintendent of the Line.

King's Cross,
31st December, 1887.

GREAT WESTERN RAILWAY.

CONTINUOUS AUTOMATIC VACUUM BRAKE.

Description.

1. The Automatic Vacuum Brake stops the train by the application of the brake blocks to the tyres, in the same way as the ordinary screw brake; but the levers which apply the blocks instead of being worked by a screw are worked by a cylinder and piston, actuated by atmospheric pressure.

2. The following are the principal parts of the apparatus on the carriages, the reference letters showing the corresponding parts on the diagrams given below :—*

A, continuous pipe, connected by flexible pipes between the carriages.

B, hollow piston rod, connected by branch pipe to the continuous pipe.

C, piston.

D, cylinder, capable of moving freely up and down on the fixed piston, and connected at the bottom with the brake levers E.

The piston is packed with an india-rubber ring, so arranged that air can pass freely from the bottom of the cylinder to the top, but not from the top to the bottom. The piston rod is also packed with an india-rubber gland.

3. *Brake off.* The air is exhausted from the pipes and cylinders by the ejector on the engine when the train is at rest, or by the air-pump on the engine when the train is in motion. The gauges on the engine and in the guards' compartments indicate the power available for stopping the train, and should show not less than 20 inches nor more than 30 inches of vacuum *when the train is running*. The vacuum being equal on both sides of the piston, the cylinder falls by its own weight and holds the brakes off the wheels.

4. *Brake on.* The moment air is admitted into the continuous pipe, whether by the engineman or by the guard, or by the accidental severance of the couplings, it rushes through the continuous pipe down the hollow piston-rod into the *upper* part of the cylinder, and, pressing the india-rubber packing ring against the sides of the cylinder, seals the vacuum on the under side of the piston so that the pressure of air in the upper part of the cylinder having nothing to balance it on the other side of the piston thrusts up the cylinder and presses the brake blocks against the wheels.

5. *Release of Brake.* When the brake has been applied it will remain on, unless released either by the exhaustion of the air from the upper side of the piston (see par. 3) or by the admission of air to the under side of the piston. In practice the latter mode is generally found convenient, and a small hole, *h*, is provided through which the air can slowly leak from the upper to the lower part of the cylinder and gradually release the brake.

6. *Release Valves.* The majority of vehicles are fitted with release valves for releasing the brake by hand, as shown at F on diagram. These valves can be opened by pulling the handle fixed on each side of the vehicles.

7. *Brake Setters.* In order to apply the brakes on each carriage in the train as nearly as possible at the same moment, it is necessary to admit the air to the continuous pipe in more than one place. For this purpose a valve or brake setter is provided in each guard's compartment, so constructed that any sudden increase of pressure in the pipe instantly causes the valve to open automatically and admit a supply of air, after which it closes again by its own weight. By lifting the handle attached to the brake setter the guard can on an emergency apply the brakes on the entire train.

Instructions for Working.

8. In the formation of trains, when the whole of the coaches are not fitted with the automatic vacuum brake those that are so fitted must be placed together, and next to the engine. When the whole train is not fitted, the automatic vacuum brake must not be used for ordinary stoppages but only in cases of emergency. In all cases where the automatic vacuum brake is only partially fitted to a train, a brake van or a carriage with a guard in it must be the last passenger vehicle in the train, and this guard must apply his hand brake in running into all stations where the train is to be stopped.

9. The brake can be applied throughout the whole of the vehicles fitted with the apparatus, by the engineman from the engine, or by the guard from his van, but in order that this may be done, it is imperative that the flexible connections between each carriage, and between the engine and the train, shall be properly coupled up.

10. Guards must never apply the automatic vacuum brake except in cases of absolute necessity, and whenever they do so a full report of the circumstances must be made on their journals; they must at all times be ready to apply the *hand brake* should the engineman call by whistle for its assistance.

* For diagram, see [C.—3873.]

11. When the automatic vacuum brake is to be used for the ordinary stoppage of trains it must be by the engineman opening the air valve on the engine, but it must be done gradually and never suddenly or with full force, except in cases of emergency.

12. In approaching junctions, terminal stations, or stations at which other trains may be standing on the same line of rails, or crossing stations on single lines, the automatic vacuum brake or steam brake must only be used in cases of emergency, the engineman taking care to reduce the speed of the train in accordance with Rule No. 293, so that the train may be brought to a stand by the hand brakes alone.

13. In the event of a train parting, the guard in the rear portion must at once apply his hand brake, and keep it tightly screwed on until the train is again coupled to the engine.

14. In descending inclines the engineman must, when necessary to reduce the speed, use the automatic vacuum brake in preference to the hand brakes.

15. In running through slip stations after a slip carriage has been detached, the vacuum brake must not be used except in cases of emergency; if it is necessary to control the speed of the train, the hand brake must be employed, and in any case the greatest caution should be used to prevent the slip carriage overtaking the train.

16. Many of the slip coaches are fitted with special apparatus to enable the automatic vacuum brake to be worked independently of the main train after the carriage has been slipped. Guards working slip coaches must make themselves thoroughly acquainted with the special directions for working the brake which are posted in the slip compartments.

17. The head guard before giving the signal to start at the commencement of the journey, and at stations where any of the flexible pipes have been coupled or uncoupled, must ascertain and inform the engineman:—

1st. That all vehicles throughout the train fitted with the brake have the flexible pipes properly coupled up:

2nd. That the flexible pipe at the rear of the last brake vehicle is properly placed upon the stop plug:

3rd. That 15 inches of vacuum is indicated by the gauge in the rear van on the train; and,

In the event of there being any vehicles on the train not fitted with the vacuum brake, the head guard must inform the engineman of the fact before starting, so that the engineman may know what number of vehicles he has control over, and what number are without the vacuum brake.

18. The engineman, before starting at the commencement of the journey, and also at stations where any of the flexible pipes have been coupled or uncoupled, must ascertain from the guard the number of vehicles in the train fitted with the brake, the flexible pipes of which are coupled up to the engine, and that a vacuum of at least 15 inches is shown by the gauge in the rear van. He must also be careful to see:—

That the vacuum pipe of his engine is properly coupled up to the leading vehicle in the train:

That at least 15 inches of vacuum is indicated by the gauge on the engine.

19. If from any cause the engineman is unable to obtain at least 15 inches of vacuum, he must inform the guard of the fact, and they must work the train forward with the ordinary hand brakes.

20. Just before coming to a stand, after the application of the automatic vacuum brake at stations, or when stopped on the road, the engineman must use his ejector so as to partially release the continuous brake. This will prevent any rebound of the carriages, and will also enable the engineman to start his train immediately on receipt of the signal to do so.

21. When the pipes between the engine and train are disconnected, the couplings must be placed on the plug stops provided for the purpose. Detached carriages must always have the hose couplings placed on the plug stops.

22. At any station where there is any likelihood of vehicles being put on or taken off, the vacuum in the continuous pipe must be destroyed by opening the air valve on the engine, so that there may be no delay in coupling or uncoupling.

23. As india-rubber is dissolved by oil or grease it is most important that nothing of a greasy nature should be applied to, or allowed to reach the piston or piston rod. The only lubrication which is required is a little pure black lead, which must be placed inside each cylinder by the persons appointed for the purpose. The other part of the brake must be cleaned and oiled by the examiners in the usual way.

24. In the case of vehicles fitted with the combined hand and vacuum brake the guard must see before starting that the hand brake is screwed "full off," and the handle secured by means of the chain provided for the purpose.

25. It is necessary that the words "Continuous Brake Train" shall be written at the top of the engineman's train bill and guard's report for every train fitted with the automatic vacuum brake. It is also necessary for the engineman to show on his mileage ticket the trains which have been worked by him with a continuous brake during the week.

26. If from any cause the automatic vacuum brake is not used, or fails to act when required, or if there is any irregularity in its working, a remark to that effect must be made by the guard on his report, and by the engineman on his train bill, which must be accompanied by a special report giving full particulars of the irregularity.

27. Guards must take care during the journey that nothing in the van is allowed to rest against or in any way interfere with the lever of the brake setter.

28. Other railway companies' vehicles fitted with the automatic vacuum brake may be coupled up and worked with G.W.R. stock. Midland, London and South-Western, and Lancashire and Yorkshire vehicles have a valve for releasing the brake by hand, which can be opened by means of a rod or wire at the side of the vehicle. London and North-Western carriages have either a rod or handle at each side; the former when attached to G.W.R. vehicles should have the rod pushed or pulled into one of the end notches on the rod; those fitted with a handle should have the handle put into the position marked "auto." unless the brake is defective, when it should be put into the centre or "cut-off" position.

All previous instructions are hereby cancelled.

W. DEAN,

Locomotive and Carriage Superintendent.

G. N. TYRRELL,

Superintendent of the Line.

November 1881.—Revised, February 1883 and April 1888.

LANCASHIRE AND YORKSHIRE RAILWAY.

INSTRUCTIONS to ENGINE DRIVERS and GUARDS respecting the AUTOMATIC VACUUM BRAKE under the Control of the Driver.

1. The brake can be applied throughout the train by the driver from the engine, or by the guard from the van. The amount of brake power at command depends upon the amount of vacuum obtained.

2. It is the duty of the fireman, when the engine is attached to the train, to connect the hose coupling on the engine to that on the train; and it is his duty,

when the engine is separated from the train, to place the hose coupling of the engine on to the plug provided for the purpose. The driver must see that the fireman attends to this.

3. Before starting, the driver must see that the gauge indicates at least 18 inches of vacuum. This is done by admitting steam to the small ejector by means of the steam cock provided for that purpose. To apply the brake, move the lever on the brake valve to "On." In ordinary running this lever must stand at "Off," or "Running Position."

4. When any vehicles have to be attached or detached, the driver must be immediately informed, so that he may destroy the vacuum in the train pipe by opening the application valve on the engine, so that there may be no delay in coupling or uncoupling.

5. Each guard must record on his journal the amount of vacuum registered when starting with his train.

6. It is the duty of the shunter or porter to connect the hose couplings between the carriages, and to place the hose coupling in the rear of the last vehicle on to the plug provided for that purpose. The guard must see that this has been properly attended to.

7. To release the brake (the engine having left the train), first see that the hose-coupling at one end of the train is off the plug; then pull the wire fixed under the body of each carriage as indicated by the arrows. This admits air to the top side of the cylinder, and the brakes fall off by gravity.

8. To couple the hose pipes, the fireman, shunter, or porter must take one in each hand and lift them sufficiently high to hook the bottom horns of the coupling together first, and then, by lowering them, place the top horns of couplings in the slots.

9. To uncouple the hose pipes, the fireman, shunter, or porter must simply lift them straight up, when the horns at the top will come out of the slots, and the couplings will then separate.

10. A chain with hook is attached at each end of the several vehicles composing the coaching stock. The shunter must put this hook round the rod of the screw coupling immediately above the ball, to prevent the latter touching the brake pipes.

11. *The guard is not to make use of the brake except in cases of emergency.*

12. When the guard has occasion to apply the brake, he must press down the lever on the valve placed in his van. This admits air throughout the train pipe. This valve in the van opens automatically when the brake is applied violently by the driver, and ensures rapid action; it should, however, only be so applied in cases of emergency. The guard must see by the gauge that a vacuum of at least 18 inches is maintained, or report otherwise to the driver.

13. In case of a break-loose the guard in the rear van must put the hand brake hard on, and place the strap on the wheel, before going back to protect his train. When a train or any portion of the same is detached, the vacuum brake must not be depended upon, but the hand brake must be used where there is one available; in other cases scotches must be utilised, so as to prevent the vehicles moving after the vacuum has been exhausted.

14. In order that engine drivers, before starting from stations with trains fitted with the automatic brake, may know when the brake connections are complete, the man whose duty it is to couple up the hose pipes must, as soon as the work is done, go to the guard and tell him all is ready for the vacuum to be created. The driver must not open the ejector until the guard, by exhibiting steadily a white hand signal, indicates that he may do so.

15. Before giving the signal for a train to start, the rear guard must satisfy himself that both the vacuum gauges in his van show not less than 18 inches of

vacuum. If the gauge does not show the proper amount of vacuum, the guard must hold up steadily a white flag or hand lamp towards the driver, and continue to exhibit it until the necessary vacuum is reached.

16. Engine drivers must test the continuous brake before passing the distant-signal of any terminal or junction station at which the train has to stop, and the speed of the train must be reduced. Engine drivers must always enter terminal or junction stations at which their trains have to stop (especially such as Manchester (Victoria), Bolton, Liverpool, Bradford, Blackburn, and Wigan, which are worked under the station yard working arrangement, and where trains form connections) at such a speed as to enable them to stop the train clear of any preceding train by the application of the ordinary hand brake only, and guards must watch the speed of their trains and assist the engine drivers by the use of the hand brake. Unless the brake is working properly when thus tried, the engineman must whistle for the guards' hand brake, stop the train, and inform the guards that the continuous brake is out of order, and the hand brake must be relied upon for working the train. Special care must then be taken in approaching stations at which the train has to stop.

17. When backing an engine to a passenger train before coupling up, the fireman must stand by his hand brake.

18. In the event of there being any vehicles on the train not fitted with the vacuum brake, the head guard must inform the engineman of the fact before starting, so that the engineman may know what number of vehicles he has control over, and what number are without the vacuum brake, the guard applying the manual brake for each stop.

19. Should the automatic vacuum brake altogether fail on a train fitted with a manual brake on the van at each end of the train, the driver must advise the guard, who must then work the rear brake if there is only one guard with the train.

20. If the train consists of more than six vehicles, and there is more than one brake-van on the train, the guard must obtain a porter to take charge of the extra van. These instructions will also apply in case of a non-vacuum engine being provided to work a train of vacuum stock.

J. A. F. ASPINALL, Chief Mechanical Engineer.
JOHN MADDOCK, Superintendent.

Manchester, December 1889.

LONDON AND NORTH-WESTERN RAILWAY.

MEMORANDUM for STATION MASTERS, ENGINEMEN, and GUARDS as to the use of the PATENT CONTINUOUS BRAKE.

Branch Line and Close Coupled Trains.

When the patent brake is fitted to close coupled trains it must necessarily be used by the guard for all stoppages. The brake in these close coupled trains must be carefully applied so as to prevent any complaints of jarring the carriages, or causing any jerk between them and the engine. The driver will only apply the brake in these close coupled trains in case of emergency.

Inspectors in the carriage department have been appointed to instruct the staff at the several stations, as well as the guards, in the manipulation of the brake and its fittings, in addition to which, at the following stations, there are men specially appointed to look after the patent brake apparatus, and any defect occurring in working must be pointed out to

them by the guards or drivers immediately on arrival at any of those places :—

Euston,	London Road,
Broad Street,	Exchange,
Willesden,	Leeds,
Bletchley,	Chester,
Northampton,	Llandudno Junction,
Peterborough,	Bangor,
Rugby,	Holyhead,
Birmingham,	Bolton,
Walsall,	St. Helens,
Wolverhampton,	Wigan,
Dudley,	Preston,
Derby,	Windermere.
Nuneaton,	Carlisle,
Stafford,	Shrewsbury,
Crewe,	Craven Arms,
Liverpool,	Abergavenny,
Stockport,	Swansea.
Longsight,	

Any irregularities or special circumstances in the working of the brake, or defects in its action, must be reported by the head guard, or guard in charge, specially to the superintendent of the line, as well as on the guards' journals.

VACUUM BRAKE.

TO ENGINEMEN, BRAKE ATTENDANTS, CARRIAGE COUPLERS, GUARDS, &c.

Instructions for working the Simple Vacuum Brake.

DESCRIPTION.

Each carriage and van is fitted with the vacuum brake, which can be applied by the driver. The van is also provided with an automatic brake, held off by a small vacuum, which is constantly maintained in the train pipe. Should this small vacuum not be kept up, the valve in the van will drop, the bell will ring, and the automatic brake be instantly applied.

A vacuum gauge is placed in the van to indicate the amount of stored-up power reserved for automatic action.

STARTING.

In order that enginemmen before starting from stations with trains fitted with the vacuum brake may know when the brake connexions are complete, the man whose duty it is to couple up the brake pipes must, so soon as that work is done, go to the driver and tell him that all is ready for the small vacuum to be raised. It will be the duty of the driver then to raise the vacuum by the use of his ejector.

Before giving the signal for a train to start the rear guard must satisfy himself that the spindle in the rear van has been raised by the small vacuum, that the small catch has dropped out of gear, that the bell in the van working in connexion with it has ceased to ring, and that the gauge shows not less than 15 inches of vacuum.

When the gauge shows 15 inches of vacuum the guard must wave a white flag by day and a white light by night to the engine-driver, who must acknowledge this signal by waving his hand in the day time and by waving a white light at night. If the gauge does not show the proper amount of vacuum, the guard must hold up steadily the white flag or hand lamp towards the driver, and must not wave it until the necessary vacuum is reached. The white and green flag must be shown separately to the drivers, and not waved together.

It will be the duty of the guard before starting the train, and at places where the engines are changed, or vehicles attached or detached, to inform the engine-driver the number of vehicles on the train fitted with the vacuum brake complete, as well as the number fitted with the pipes only.

ATTACHING AND DETACHING.

Vehicles fitted with vacuum brake pipes only, when attached behind the rear van, must have the vacuum

pipe connected up to the van, and before giving the driver a signal to start, the guard must satisfy himself that the gauge in the van shows not less than 15 inches of vacuum.

AUTOMATIC BRAKES.

If at any time during a journey the automatic brake goes on, and the bell rings, the guard must at once endeavour to ascertain the cause. It may be caused by the train breaking in two, by omission on the part of the driver to maintain the small vacuum, or by failure of some part of the brake apparatus.

In all cases where the automatic brake goes on while the train is in motion, guards must not release this brake until either the train is brought to a stand or on receipt of a signal from the driver to do so.

In all cases the guards must enter particulars of the occurrence in their reports.

SHUNTING.

To enable a van to be moved when the engine is detached from the train, the automatic brake can be held off by pulling up the spindle of the valve with the left hand, and by hooking in the catch with the right. The valve must be so hooked up on coming to a stand at the end of a journey.

BELL.

The bell must always be kept wound up, the carriage department being responsible for this duty at the time the train is marshalled, and the guard for attending to it on the journey.

The bell should ring when the engine is detached from a train at intermediate stations, or when the vacuum pipe is disconnected for the purpose of attaching or detaching vehicles, and when this is the case guards, porters, carriage examiners, and others concerned, are instructed that they must not interfere with the spindle in any way to prevent the bell from ringing. Guards must satisfy themselves when taking charge of a van that the bell in the van is fully wound up.

CUT OFF ARRANGEMENT.

There is a handle painted red placed at each side of the carriage near the centre, and close under the frame, the object of which is to cut off the connexion between the train pipe and brake cylinder. This handle forms part of a rod extending across the carriage, and provided at each end with three notches. When the brake on a carriage is out of order from leakage or other cause, or when a carriage has to run on a foreign line with an automatic brake, such as the Great Western, Lancashire and Yorkshire, Furness, Great Northern, and Midland Railways, and the railways south of the Thames, this handle must be pulled or pushed into one of the end notches. When right for working, the handle will stand in the centre notch, and level with the side of the carriage frame.

Care must be taken that the handle is returned to this position (centre notch) when the carriage is put into traffic after having undergone repairs to brake gear, or after it has been working on a foreign line, such as those named above.

London and North-Western vehicles fitted with pipes only, and which have no brake apparatus operating on their own wheels, have the end pipes painted red.

FOREIGN COMPANIES' VEHICLES ON VACUUM BRAKE TRAINS.

The vacuum brake stock of the following railway companies may be treated in exactly the same way as ordinary London and North-Western brake stock :—

Caledonian,
Cambrian,
Cheeshire Lines,
Manchester, Sheffield, and Lincolnshire,
Manchester South Junction and Altrincham,
North Stafford.

Any other company's vehicles fitted with vacuum brake must, in all possible cases, be placed in rear of London and North-Western trains, and the pipe

not coupled up. If it is absolutely necessary to marshal them in the trains, the pipes must not be coupled up, and the vacuum brake must only be used on the vehicles between them and the engine.

If, however, the foreign vehicles are fitted with an apparatus for cutting off the brake cylinder from the main train pipe, and the brake can be put out of gear by means of such apparatus, the pipes may be coupled up.

Horse-boxes and other vehicles fitted with *pipes only* may be marshalled in the trains and the pipes coupled up.

HAND BRAKE.

Guards are reminded that they must use their hand brakes to stop trains on approaching terminal stations or bay sidings, and must not rely on the drivers pulling up trains by means of the vacuum brake.

The continuous brakes throughout the train being under the control of the driver, the use of the hand brake in the vans is not required for ordinary stops, but guards must be prepared to apply the hand brake immediately on its being called for by the driver's whistle.

GEO. FINDLAY.

Euston Station,
December 1888.

SIMPLE AND AUTOMATIC VACUUM BRAKES.

Crewe Works,
1st March 1888.

Instructions to Drivers.

Drivers are hereby instructed that they must ascertain, when attaching to a train, whether it is to be worked "simple" or "automatic."

SIMPLE VACUUM BRAKE.

When working trains with the simple vacuum brake, the split pin attached to the quadrant of the driver's valve brake must be placed in hole marked A.

To keep the van brakes out of action the small vacuum must be maintained by the small ejector, and the finger of the gauge kept standing about the position shown in the diagram.

The steam brake cannot be used alone when the engine is attached to a train, but the vacuum brake can be used alone by pulling the lever of the driver's brake valve over to the small shoulder C in the quadrant and working the large ejector; and the vacuum and steam brakes can both be applied together by pulling the lever over to the full extent of the quadrant.

AUTOMATIC VACUUM BRAKE.

When working trains with the automatic brake, the split pin attached to the quadrant of the driver's brake valve must be placed in hole marked B.

To keep the train brakes "off," the vacuum must be obtained by the big ejector before starting; this will charge all the vacuum reservoirs throughout the train. After the vacuum is created, it must be maintained by the small ejector, and the vacuum gauge in the rear van must register at least 15 in., and the driver must receive a signal that such is the case before starting.

When the vacuum is being maintained satisfactorily, the driver should note the index on the wheel of the small ejector steam valve, for the convenience of re-setting after the valve has been closed for any purpose.

The steam brake cannot be used alone when the engine is attached to a train, but the vacuum brake can be applied alone by means of the ordinary release valve on the right or left-hand side of the footplate, as the case may be. And the steam and vacuum brakes can be applied together by pushing the driver's brake valve handle right over to the full extent of the quadrant.

When stopping in the ordinary course, it will not be necessary to close the small ejector steam valve

whilst applying the vacuum brake, but if a specially quick stop is required it should be closed.

When disconnecting the engine from a train, the hose-pipe on the first vehicle should be replaced on its stop plug as quickly as possible to prevent the vacuum throughout the train pipe from being entirely destroyed.

SHUNTING.

Vehicles cannot be shunted out of a train which is arranged for automatic working without the vacuum is first destroyed on such vehicles; this may be effected either by placing the handle on the side of the frame in the "simple" or in the "release" position, or by pulling a wire under the frame, which will be found on those vehicles fitted to work simple or automatic; this allows the air to enter the vacuum reservoir and the top of the sack, and so releases the brake.

BRAKE GETTING OUT OF ORDER ON A JOURNEY.

If the brake on any vehicle should get out of order on a journey, the handle on the side of the frame must be placed in the "cut off" position; this will prevent the brake working on that vehicle, but will not interfere with the working of the brake on the remainder of the train.

F. W. WEBB,
Locomotive Superintendent.

TO BRAKE ATTENDANTS, CARRIAGE COUPLERS, GUARDS, &c.

Instructions for Working the Automatic Vacuum Brake.

DESCRIPTION.

1. The automatic brake is continuous throughout the whole length of the train—each vehicle carrying its own reservoir and cylinder, which are connected by a branch pipe to the main train pipe. Should a train fitted with this brake become divided when running, the hose-pipes will become detached, and the brake will go on throughout each portion of the train.

2. The brake power available depends upon the amount of vacuum maintained by the driver. It is therefore strictly necessary that not less than 15 inches of vacuum be maintained in the rear van whilst the train is in motion.

3. The brake is applied by the driver admitting air into the main train pipe, and this also can be accomplished, in case of emergency, by the guard pressing down the lever of the valve fixed on the iron pipe erected near his seat.

4. When a sudden application of the brake is made, the valve in each guard's van will open automatically, thereby admitting air into the main train pipe, and thus ensuring a rapid application of the brake.

5. There are two gauges in the van, one showing the amount of vacuum in the train pipe, and the other the amount of vacuum in the reservoir.

6. The brake is released by the driver re-creating the vacuum throughout the whole train. When the engine is detached the brake can be released as follows:—

1st. On vehicles which have a quadrant and lever fixed on the sole bar, lettered "auto," and "simple," by moving the lever from "auto." to "simple," or by pulling the wire which will be found close to the above lever.

2nd. On automatic vehicles which have a quadrant and lever fixed on the sole bar, lettered "auto.," "release," "cut off," the brake must be released by moving the lever from "auto." to "release."

The hose-pipe in both cases must also be off the stopper at one end of the train.

STARTING.

7. In order that engine-drivers, before starting from stations with trains fitted with the automatic brake, may know when the brake connexions are complete, the man whose duty it is to couple up the hose-pipes

must, as soon as the work is done, go to the guard and tell him all is ready for the vacuum to be created. The driver must not open the ejector until the guard, by exhibiting steadily a white hand signal, indicates that he may do so.

8. Before giving the signal for a train to start, the rear guard must satisfy himself that both the vacuum gauges in his van show not less than 15 inches of vacuum. If the gauges do not show the proper amount of vacuum, the guard must hold up steadily a white flag or hand lamp towards the driver, and continue to exhibit it until the necessary vacuum is reached. When the gauges show not less than 15 inches of vacuum, the guard must wave a white flag by day and a white light by night to the engine-driver, who must acknowledge this signal by waving his hand in the daytime and by showing a white light at night.

9. This brake signal must always be given by the guard, and acknowledged by the driver, before starting the train from the station at which it was made up, or from any place at which the continuity of the brake has been interfered with by engines or vehicles being attached or detached. Before giving the "all right" signal, the guard must be careful to see that both gauges in his van indicate the same amount of vacuum.

DURING JOURNEY.

10. Guards must see that during the journey nothing is allowed to obstruct the action of the lever of the emergency valve in the brake vans.

11. If, during the journey, the guard should notice anything wrong with the brake apparatus, or should the vacuum gauges show less than 15 inches, he must call the driver's attention by pulling the communication cord and showing to the driver a green flag or hand lamp. This will signify to the driver that the automatic brake must not be entirely relied upon for pulling up the train at the next stopping station, and the guard must be prepared to assist the driver with his hand brake.

12. In foggy weather the driver must bring the train to a stand immediately the cord is pulled.

13. Each case to be reported on the guards' journal.

14. The continuous brakes throughout the train being under the control of the driver, the use of the hand brake in the vans is not required for ordinary stops, but guards must be prepared to apply the hand brake immediately on its being called for by the driver's whistle.

15. In case of a break-loose the guard in the rear van must put the hand brake hard on, and place the chain on the wheel before going back to protect his train.

16. Guards are reminded that the continuous automatic brake will not (except in emergency) be used when entering terminal and other principal junction stations, and that at such places they must watch the speed of the trains and assist the engine drivers by using their hand brakes.

CUT-OFF ARRANGEMENT.

17. When the brake gear on any vehicle is out of order, from leakage, or any other cause, the lever on the carriage underframe must be moved into the cut-off position; this will prevent the brake gear from working on that vehicle, but will not interfere with the brake on the remainder of the train.

SHUTTING.

18. When vehicles have to be moved after the engine is detached, it must first be seen that the hose-pipe at one end is off the stopper. The brake must be released as shown in paragraph 6. Care must be taken that the lever is returned to the automatic position after the brake has been released.

19. It is the duty of the fireman, when the engine is attached to the train, to connect the hose coupling on the engine to that on the train; and it is his duty,

when the engine is separated from the train, to place the hose coupling of the front carriage on to the stopper provided for the purpose.

20. Horse-boxes and carriage-trucks are being fitted with the automatic brake only, and when any so fitted are attached to trains worked automatically the lever on the underframe must be moved into the automatic position. When these vehicles are marshalled in simple vacuum brake trains the lever must be placed in the cut-off position; this will prevent the brake gear working on such vehicles, but will not interfere with the rest of the train.

FOREIGN COMPANIES' VEHICLES ON AUTOMATIC VACUUM BRAKE TRAINS.

The vacuum brake stock of other railway companies, except the following, may be treated in exactly the same way as the London and North-Western automatic brake stock:—

Caledonian.
Cambrian.
North Stafford.
Great Northern.
Manchester, Sheffield, and Lincolnshire.
South Eastern.
Manchester South Junction and Altrincham.
Cheshire Lines.

These companies' vehicles fitted with vacuum brake must, in all possible cases, be placed in rear of London and North-Western trains and the pipes not coupled up. If it is absolutely necessary to marshal them in the trains the pipes must not be coupled up, and the automatic vacuum brake must only be used on the vehicles between them and the engine.

If, however, the foreign vehicles are fitted with an apparatus for cutting off the brake cylinder from the main train pipe, and the brake can be put out of gear by means of such apparatus, the pipes may be coupled up.

G. FINDLAY,
Euston Station, General Manager.
April 1888.

LONDON AND SOUTH-WESTERN RAILWAY.

Instructions to Enginemen, Guards, Carriage Examiners, and all others concerned, as to the use of the Continuous Automatic Vacuum Brake.

Description.

1. The automatic vacuum brake stops the train by the application of the brake blocks to the tyres of the carriages in the same way as the ordinary screw brake, but the levers which apply the blocks, instead of being worked by a screw, are worked by a piston actuated by atmospheric pressure in a cylinder.

2. The following are the principal parts of the apparatus on the carriages:—

- The cylinder.
- „ piston or diaphragm.
- „ ball valve.
- „ main train pipe.
- „ flexible branch pipe, connecting bottom of cylinder to train pipe.
- „ vacuum chamber, connected to top of cylinder.
- „ miniature sack, to prevent the admission of cold air to the bottom of piston.
- „ release lever or ball valve, connected to each side of carriage underframe by wire cord.
- „ dummy.
- „ "Universal" hose and coupling.

3. By means of the ejector placed upon the engine the air is drawn out of the main train pipe, and from the top and bottom sides of the piston or diaphragm in the cylinder through the flexible branch pipe and through the ball valve from the vacuum chamber, so that in running a vacuum should be maintained throughout the system of 20 inches, and certainly not less than 15 inches.

4. *Brake on.*—The brake is operated either by the brake valve on the engine in connexion with the main train pipe or by the guard pressing downwards the lever of the van valve, which is likewise connected with the main train pipe. The effect of this is to admit air to the train pipe, and thence through the flexible branch pipe to the bottom side of piston, thereby applying the brakes, the top side and vacuum chamber maintaining the vacuum through the action of the ball valve, which closes immediately air is admitted to the train pipe.

On a full application of the brake—from whatever cause—all the van valves in the train will open automatically and admit air through each van valve simultaneously, thus obtaining a more rapid application of the brake.

5. In the event of a train parting, the "Universal" hose and couplings will, without damage, become detached, and the brakes will immediately apply themselves.

6. *Brake off.*—In order to release the brakes the driver must move the lever of brake valve on the engine to the position marked "off," when the ejector will at once re-create the vacuum throughout the system as before described, thus allowing the piston to fall by its own weight and thereby release the brakes.

7. To release the brakes on any carriages that require to be shunted, in the event of the engine not having done so before being detached from the train, the ball valve must be opened on those carriages by means of a small wire cord which is placed on either side of the carriage underframe. This admits air to the vacuum chamber and top side of piston, thus restoring equilibrium on both sides of piston, under which conditions the brakes fall off by their own weight.

8. A dummy is provided to which the rear coupling must always be attached.

Instructions for working.

9. In the formation of trains, the coaches fitted with the automatic vacuum brake must be placed together next to the engine, so that the automatic vacuum brake may be used.

10. The brake can be applied throughout the whole of the vehicles fitted with the apparatus by the engine-man from the engine or by the guard from his van, as before described; but in order that this may be done, it is imperative that the flexible connexions between each carriage and between the engine and the train be properly coupled up; also that the flexible connexion on the last vehicle fitted with the brake be placed on the dummy provided for that purpose as described in clause 8.

11. The brake must be used for ordinary stops, but must not be applied with full force except in cases of emergency. For ordinary stops, and particularly when approaching junctions where timed to stop, enginemen must be careful to reduce the speed, so that a moderate application of the brake will suffice.

12. Guards must not apply the automatic vacuum brake except in cases of absolute necessity, and whenever they do so a full and special report of the circumstances must be made, and the occurrence must also be notified on their journals; they must at all times be ready to apply the hand brake should the driver call for assistance.

13. In approaching terminal stations, or stations at which other trains may be standing on the same line of rails, the vacuum brake must not be used except in cases of emergency, but the speed of the train must be so reduced that it may be brought to a stand by means of the hand and steam brakes alone.

14. In descending inclines the engineman must use the automatic vacuum brake in preference to the hand and steam brakes.

15. In running through slip stations after a slip carriage has been detached, the vacuum brake must

not be used excepting in cases of emergency. If it is necessary to control the speed of the train, the hand brake must be employed; in any case the greatest caution should be used to prevent the slip carriage overtaking the train.

16. *Guards.*—The guard before giving the signal to start at the commencement of the journey, and at stations where any of the flexible pipes have been coupled or uncoupled, must ascertain and inform the engineman—

(a.) That all the flexible pipes are properly coupled up continuously throughout the train, and that the flexible pipe of the last brake vehicle is properly placed upon the dummy.

(b.) The number of vehicles in the train fitted with the brake the flexible pipes of which are coupled up to the engine.

(c.) The number of inches of vacuum indicated by the gauge in the rear van.

17. *Enginemen.*—The engineman before starting at the commencement of the journey, and also at stations where any of the flexible pipes have been coupled or uncoupled, must ascertain from the guard the number of vehicles in the train fitted with the brake the flexible pipes of which are coupled up to the engine, and the number of inches of vacuum shown by the gauge in the rear van.

He must also be careful to see—

(a.) That the vacuum pipe of his engine is properly coupled up to the leading vehicle in the train.

(b.) The number of inches of vacuum indicated by the gauge on the engine.

18. If from any cause the engineman is unable to obtain at least 15 inches of vacuum he must inform the guards of the fact, and the train must be worked forward with the ordinary hand and steam brakes, and he must report on his daily brake return when he is not able to obtain 20 inches.

19. When the pipes between the engine and train are disconnected, the couplings must be placed on the dummies provided for that purpose. Detached carriages must always have the hose couplings placed on the dummies.

20. At any station where the driver is informed that vehicles are to be attached to or taken off the train, the vacuum in the main train pipe must be destroyed, as described in clause No. 7, so that there may be no delay in coupling or uncoupling.

21. In the case of vans fitted with the combined hand and vacuum brake, the guard must see before starting that the hand brake is screwed full "off" and the handle secured by means of the chain provided for the purpose.

22. It is necessary that the forms specially provided for the purpose should be made out daily by enginemen working automatic vacuum brake trains, and be left with the daily return each night, and if from any cause the brake is not used, or there is any irregularity in its working a remark must be made by the driver on the form to that effect, and also by the guard on his journal.

The guard must also make a special report of the occurrence.

23. When vehicles are supplied with connecting pipes only, they must be considered as vehicles without the brake, but the brake connexions must be made as described in clause 10.

24. When vehicles not fitted with a continuous brake or having connecting pipes only, are attached to a train fitted with such brake, or to an engine having the brake on the engine wheels as well as the tender wheels, the guard in the rear van must, immediately upon the continuous or engine brake being applied by the driver, apply his hand brake, and keep it tightly on, either until the train has come to a stand or the driver has taken off his brake, and is again going forward, as the case may be. This arrangement is necessary to prevent the rebound of the carriages and possible breaking of the drawbars

which may occur when a powerful brake is applied to the front portion of the train only.

W. ADAM,
Locomotive and Carriage Superintendent.

E. W. VERRINDER,
Traffic Superintendent.

London, November 1882.

LONDON, BRIGHTON, AND SOUTH COAST RAILWAY.

WESTINGHOUSE AUTOMATIC AND CONTINUOUS BRAKE.

Description and instructions for working.

DESCRIPTION.

Compressed air is the agent employed to apply the brake. The air is compressed by a small engine and pump placed on the locomotive. The driver or any of the guards can apply the brake, *and it applies itself, in the case of a break-away, or the failure of its main pipe or couplings.*

The tender and each of the vehicles of the train are fitted with the following parts:—(1) a triple valve, (2) a supplementary air reservoir, and (3) a cylinder with piston; the latter in connexion with (4) the brake lever and blocks.

When a train is made up and ready to start, and also when it is running, compressed air stands at equal pressure throughout its length, that is to say, in the main reservoir, in the pipe from end to end of the train, and in the triple valve and supplementary reservoir on each vehicle.

To apply the brake, air is allowed by the driver to escape, or in an emergency, by any of the guards. This causes the triple valves to move down, the air stored in the supplementary reservoirs to pass instantly into the cylinders, the pistons and rods to be forced out, and the blocks to press against the tyres of the wheels.

To release the blocks from the wheels, air is allowed to pass from the main reservoir along the train. This moves the triple valves up, re-charges the supplementary reservoirs, and at the same time allows the air which had forced out the pistons to escape into the atmosphere.

INSTRUCTIONS.

Drivers must see (1) that the steam cylinder is kept well lubricated, (2) that the air pump is sparingly lubricated with a small quantity of mineral oil—tallow or lard oil must not be used in the air pump,—(3) that the pump is constantly run, but *never faster than is necessary to maintain the required air-pressure*, say for stopping trains 60 lbs., and for express trains 85 lbs.

The brakes must not be used with more than half the full force, except in case of danger.

The brakes are fully set when the pressure shown on the gauge is reduced 25 lbs. Any further reduction would be waste of air.

To apply the brakes lightly, the tap must be partially opened and gently closed when the pressure has been reduced from 4 to 8 lbs.

In releasing the brakes the handle must be moved against the stop and kept there for about five seconds, and then moved back just far enough to stop the flow of air from the small hole in the top of the tap.

Drivers, upon feeling the brakes are applied, must at once aid in stopping the train by turning the three-way cock and preventing escape of air from the main reservoir.

Guards.—After making up or adding to a train, or after another engine has been attached, the rear guard must ascertain whether the brake is connected throughout by examining the pressure in the gauge, slightly opening its escape tap, and ascertaining that air escapes, or, when a van is not the last vehicle, by opening the rear tap in the brake pipe.

Guards, when they have occasion to apply the brake from a van, must hold the handle and allow the air to escape until the train is brought to a standstill, but must only use the brake in case of emergency.

Guards must, in all cases, screw the hand brakes clear off before starting.

General.—Before detaching the engine, the brakes must be fully released on the whole train. Neglecting this precaution, or setting the brakes by opening a valve or tap when the engine is away, may cause serious inconvenience in shunting. The pipes and joints must be kept tight, and when leaks are discovered they must be corrected, if serious, before the vehicle is again used.

The brake pipe has a tap at each end of every vehicle, all of which taps should be open when the hose couplings are united, except the one at the rear of the train. These taps must always be opened after connecting the hose couplings, *and closed before separating them.*

If the brakes are applied by the separation of the train, or the breaking of a pipe, they can be released by opening the small taps in the brake cylinder or pipes leading thereto. These taps, after the release of the brakes, must be closed. If the brakes are applied after the engine has been disconnected, they can be released as above, or by again connecting.

It is important to observe that the taps at the ends of the vehicles are open when the handles stand across, or away from the line of pipe, and closed when parallel to, or alongside the pipe.

When the handle of the tap of the triple valve stands across, or away from the valve, it is set for the automatic brake. When against the stop at an angle of 45°, the brake is thrown out of use on the carriage.

Care must be taken (1) that the brake connections are perfect, and properly adjusted for the wear of the blocks and wheels, (2) that the brake cylinders are perfect and lubricated occasionally with *mineral oil*, and (3) that the couplings and other parts are tight.

Carriage examiners must see that the cocks under each carriage are in their proper position before the train starts, so that it may not be delayed on the journey.

Shunters in all cases, after coupling the connexion pipes, must open the cocks at the end of each carriage except the last, so as to complete the brake throughout the train. In uncoupling, the connexion pipe cocks must be shut, but before doing so, shunters must satisfy themselves that the driver has taken the brake off, and that the hand brake at the rear of the train has been applied.

No person must tamper with the tap in the brake van, as by so doing the brake is instantly applied, and cannot be taken off again except by opening the cock under each carriage, or attaching the engine to the train.

Engine-drivers and guards are not to depend entirely upon the action and power of the brake, but, when approaching terminal stations, or junctions, must have their trains well under control, so that the trains can be brought to a standstill with the hand brakes, if necessary.

The engine-drivers and guards must ascertain before the departure of the train if the automatic brake is complete throughout the train.

Trains fitted with this automatic brake must not approach and enter terminal stations at a speed greater than that which has been usual with trains worked by the ordinary hand brake.

J. P. KNIGHT,
General Manager.

London Bridge,
16th April 1878.

LONDON, CHATHAM, AND DOVER RAILWAY.

WESTINGHOUSE AUTOMATIC AIR-BRAKE.

Notice to engine-drivers, guards, carriage examiners, shunters, and all concerned.

Where engines fitted with the Westinghouse brake are attached to trains wholly or partly fitted with this brake, the engine connexion must always (where possible) be coupled up to the leading vehicle and the brake made complete as far as can be throughout the train. Guards of such trains will inform the drivers how many vehicles are so connected to the engine.

LONDON, TILBURY, AND SOUTHBEND
RAILWAY.INSTRUCTIONS AS TO WORKING THE WESTINGHOUSE
CONTINUOUS BRAKE.*Description.*

Compressed air is the agent employed to apply the brake. On the engine there is a donkey pump for compressing air into a main reservoir. There is one 18 in. brake cylinder for the driving wheels, and one 8 in. for each other vehicle. A single line of pipe extends the entire length of the train. On the engine and each vehicle is a triple valve having one connexion with main pipe, and second connexion to a reservoir on each carriage, and a third connexion to the brake cylinder. The pipe from the main reservoir leads to a valve and thence to the train. This valve is operated by the driver, who, by the movement of the handle in one direction, admits air to the main pipe from the main reservoir in order to charge the small reservoirs and release the brakes when they are applied, and by moving it in the opposite direction, discharges air from the brake pipe to the atmosphere, and so applies the brakes. If a train breaks in two, the couplings come apart so as to permit the escape of air and the consequent application of the brakes. Similarly, if the pipe is fractured, the brakes are at once applied.

The operation is as follows:—The pump is started and air is compressed into the main reservoir. When the engine is coupled to the train, air passes into the pipe, triple valve, and reservoir on each carriage, charging all equally.

To apply the brakes, the pressure is lowered in the brake pipe by the driver operating his valve. This causes the triple valve to move so as to open a passage for the compressed air from each reservoir to its brake cylinder, the piston of which applies pressure to the levers and brake blocks.

The brakes are fully set when a reduction of pressure to the extent of 25 lbs., shown by the gauge, has been obtained; any further reduction is a waste of air.

The brakes are released by admitting air from the main reservoir to the brake pipe, which re-charges the pipe and triple valves and reservoirs, whilst at the same time a passage is opened from each cylinder to the atmosphere. A cock is placed between each triple valve and the main pipe, so that the brake on any particular carriage can be put out of use. The brakes of the detached portion of a train, if applied, can be released by holding open a valve on each brake cylinder. These release valves close automatically when not held open to release the brakes. There is a cock in each van to apply the brakes, and a gauge on the engine, and in each van to indicate the pressure in the main pipe; there is also a gauge on the engine to indicate the pressure in the brake cylinder.

Instructions.

Drivers must see:—(1) that the top, or steam cylinder of the air pump is kept well lubricated; (2), that the air cylinder is sparingly lubricated with the lubricator provided for the purpose; (3), that the pump is constantly run, but never faster than is necessary to maintain the required air pressure; and (4), that air from 60 to 65 pounds pressure is carried.

For ordinary stops the brake should be applied lightly, by turning the handle of the driver's valve to the right, and gently closing it again, after a reduction of pressure in the brake pipe of not less than 5 lbs. nor more than 8 lbs. has been made. If the pressure runs up on the gauge when the handle is brought back, it shows that the valve has been shut too quickly.

In ordinary working the brakes are fully applied when the pressure shown on the gauge is reduced 25 lbs.; any further reduction is a waste of air. In case of emergency, however, the handle must be turned so as to let all the air in the brake pipe escape.

The guards working these trains must not work their ordinary hand-brakes unless the engine-driver whistles for them to do so, and they must on no account put on the patent brake unless they should see anything wrong with the train or on the line which would necessitate it being pulled up at once.

The engine-drivers and guards must ascertain before the departure of the train if the patent brake is complete throughout the train.

Guards, before leaving *terminal stations*, and also after connecting the *City* portion at *Herne Hill*, must ascertain that all the hose couplings are connected, and the cocks in the brake pipes are open throughout the train by applying the brake (after the engine is attached) from the rear van, or, if the van is not at the end of the train, by opening the cock in the brake pipe at the rear of the last vehicle.

Carriage examiners, before the train starts, must see that the cocks under the carriages connecting the *triple valves* with the main brake pipe are full open, and that the release valves on the brake cylinders are in proper working order with the pull chains for opening them attached to the sides of the under frame.

Shunters and Porters, after connecting the hose couplings, *must open the cocks* at the end of each carriage, except the last, so as to complete the brake throughout the train. Before separating the hose couplings *these cocks must be closed*.

No person must tamper with the valve in the brake van, as by so doing the brake is instantly applied, and cannot be taken off again except by opening the cock under each carriage, or attaching the engine to the train.

The brake is not in force between Holborn and Herne Hill, the engine working the *City* part not being fitted with it.

The coaches fitted with the patent brake must be kept for the trains above described, *and must not on any account be used in any other trains*. Guards to report any disregard of this order.

On approaching terminal stations, drivers must take care to have their trains well under control, so that, if necessary, trains may be brought to a standstill by hand-brake.

THE VACUUM AUTOMATIC BRAKE.

This Brake can be applied throughout the train by the driver from his engine, or by the guard from his van.

Drivers' Instructions.—Before starting see that your gauge indicates at least 18 inches of vacuum. This is done by admitting steam to the small ejector by means of a steam cock placed for that purpose. To apply the brake move the lever on the combination ejector to "on." In ordinary running this lever must stand at "running position." To release the brake move the lever to position "off." *When the vacuum is suddenly destroyed in the main pipe the brake is full "on."* When separated from your train see that the couplings are placed upon the dummies fixed for that purpose.

Guards' Instructions.—To apply the brake press down the lever on the valve placed in the guard's van. This admits air throughout the train pipe, and is to be only employed in cases of emergency. This valve opens automatically when the brake is applied with full force by the driver, and ensures rapid action. See that all pipes between carriages are properly coupled together, and that the couplings on the end coaches are placed upon the dummies. See by your gauge that a vacuum of 18 inches is maintained. Report otherwise to driver.

General Instructions.—To release the brakes for shunting purposes (the engine having left the train), first see that the hose coupling at one end of the train is off the dummy, then pull the cord which is fixed under the body of each carriage as indicated by the arrows. This admits air to the top side of the cylinder, and the brakes come off by gravity.

March 1885.

Long trains require more careful handling than short trains, and a greater quantity of air must be discharged from the brake pipe to make the same reduction per square inch on the gauge. The driver, before starting, must ascertain the number of vehicles on the train and the number working with brakes or pipes only.

In releasing the brakes, the handle should be kept in release position until the pointer of the indicator shows signs of rising and then be moved back against the intermediate stop, which is the feed position, where it must remain whilst the train is running.

The driver must always satisfy himself that the brake coupling on his engine is properly connected to that on the train, and that the cocks in the brake pipe, *except the one at the rear of the last vehicle connected with the Westinghouse brake* are open.

The blocks of the driving wheel brake should be so adjusted, by turning the screw, that the pistons travel from 3 to 4 inches.

The driver must be careful to drain the water out of the main reservoir once a week, and in frosty weather more frequently.

If vehicles, having different air pressures, be coupled together, the brakes will apply themselves on those which have the highest pressure. To ensure the certain release of all the brakes in the train, and in order that the train may be charged quickly, the driver must carry the maximum pressure in the main reservoir before connecting to the train. When coupled to the train, he must put the handle of his brake valve in the release position until the train is charged with air, and this is shown to have taken place when the pointer of the indicator begins to rise. If the brakes on the engine are found to apply themselves when the engine is coupled to a train not charged they should at once be taken off by opening the release valve from the brake cylinders.

After connecting the engine to the train, or after new vehicles have been added, the pipes and reservoirs should be charged as quickly as possible. The brakes should then be applied with full force by the driver, who should not start away until the inspector or guard has signalled that the brakes are acting on all the vehicles.

The driver, before commencing a journey, must inform the guard whether the engine is fitted with the brake apparatus or not, in order that he may know how to act as to the use of the hand brakes.

Should the driver discover any defect in the working of the brake which will render it ineffective, he must at once give the guard notice, and arrange with him as to the use of the hand brake in the van, when necessary.

In running into stations with block ends, and at junctions where he has to stop, and also when moving up to attach his engine to a train, the driver must not rely upon the continuous brake, but must so regulate the speed of his engine that the ordinary application of the hand brakes on the engine will be sufficient to bring the train or engine to rest. In ordinary stoppages at stations, the driver must use the brakes so as to stop the train without any jerk.

The brakes must not be used with more than half their force, except in cases of emergency.

When working the Westinghouse brake with two engines coupled together, the driver of the leading engine must take charge of the brake, and he must work it as he would on an ordinary train, not considering the second engine, except as a vehicle.

The driver of the second engine must keep his handle in the neutral position, and the donkey pump working; by this means he shuts off all communication from the main reservoir to the main pipe of the train.

The driver, on finding that the brakes have been applied by the guard, or automatically, must at once aid in stopping the train by turning the handle of the driver's valve towards the right, thus preventing escape of air from the main reservoir.

The driver must enter on his engine ticket all cases of irregularity in the working of the brakes.

Guards.—Before commencing a journey must ascertain from the driver whether the engine is fitted with the Westinghouse brake apparatus or not, and before leaving the terminus, or after adding to a train on the journey, or on another engine being attached, the rear guard must ascertain whether the couplings are connected, and the cocks in the brake pipe are all open (except the one at the rear of the last vehicle connected with the Westinghouse brake) throughout the train by applying the brakes from his van and seeing that *they are released from the engine*. In making this test the pressure of air in the pipes, as shown by the indicator, should not be reduced more than is absolutely necessary. If the Westinghouse brake is not in use on the whole train, or if the guard's van is not the last vehicle, the test should be made by opening the cock in the brake pipe of the last vehicle connected.

A guard, if he should have occasion to apply the Westinghouse brake from his van during the running of the train, must open the tap and allow the air to escape until the train is brought to a standstill, but he should only use the Westinghouse brake in cases of emergency.

In running into stations with block ends, and on approaching junctions where the train may have to stop, the guards must be especially prepared to assist the driver by the ordinary application of their hand brakes to bring the train to rest.

The guards must, in all cases, screw the hand brakes clear off before starting.

The guard must enter, on his report, all cases of irregularity in the working of the brakes.

Examiners (Locomotive Department).

Examiners must see:—(1) That the brake connections are perfect and properly adjusted for the wear of the blocks and wheels by being uniformly taken up. The pistons of double piston cylinders should each travel not less than two, nor more than four inches. Those of single piston cylinders should not travel less than four, nor more than eight inches. (2) That the brake cylinders are perfect and lubricated at least every three months with mineral oil. (3) That the hose couplings are united, and the cocks in the pipes, except the one at the rear of the last vehicle connected with the Westinghouse brake, are open, that is, the handles must stand across or away from the pipe, except the one at the rear of the last vehicle connected with the Westinghouse brake, which must lie along the pipe in the shut-off or closed position. (4) That the joints are all air-tight.

General.—Before detaching the engine or any carriages the brakes must be fully released on the whole train. Neglecting this precaution, or setting the brakes by opening a valve or tap when the engine is away, may cause serious inconvenience in shunting. The pipes and joints must be kept tight, and when leaks are discovered they should be corrected, if serious, before the vehicle is again used.

The brake pipe has a tap near its junction with the hose coupling at each end of every vehicle, and these taps must always stand open between each vehicle when the hose couplings are united, and always closed when the hose couplings are not united. After connecting two hose couplings these taps must always be opened, but before separating two hose couplings these taps must always be closed.

The taps are open when the handles stand away from, or at right angles with, the brake pipe, and closed when the handles lie along, or in the same direction as, the brake pipe.

If the brakes are applied by the separation of the train, or the breaking of a pipe, they can be released by opening the small release valves in the brake cylinder or pipes leading thereto. These taps after the release of the brakes must be closed.

If the brakes are applied after the engine has been disconnected, they can be released as above or by again connecting to the engine.

The brake of any vehicle can be put out of operation without affecting the others, by closing the tap under that vehicle, between the brake pipe and triple valve.

No person must tamper with the tap in the brake van, as by so doing the brake is instantly applied, and cannot be taken off again except by opening the cock under each vehicle, or by attaching the engine to the train.

Station masters, inspectors, guards, shunters, and all members of the staff concerned in the working of the trains, must make themselves thoroughly acquainted with the whole of these instructions.

ARTHUR L. STRIDE,
Engineer and Manager.

MERSEY RAILWAY.

VACUUM CONTINUOUS AUTOMATIC BRAKE.

All engines and carriages owned by the Mersey Railway are fitted with this brake apparatus.

This can be applied throughout the train by either the driver from the engine or the guard from the brake-van. The engines of the new "Victoria" class are fitted with the vacuum brake, but in engines of the old "Major" class, the apparatus, although worked from the engine, does not put on the brakes on the engine or tender, a steam brake being supplied for this purpose.

The continuous brake must be used by the drivers for all stoppages, but the guards must not make use of it except in cases of absolute necessity, and whenever they do so, a full and special report must be made of all the circumstances, the fact being also noted on their daily report.

The amount of brake power at command depends upon the amount of vacuum obtained, and before starting, the driver must see that the gauge indicates at least 18 inches of vacuum. This is obtained by admitting steam to the small ejector by means of the steam cock provided for the purpose. To apply the brake, move the lever on the brake valve to "ON." In ordinary running this lever must stand at "RUNNING POSITION." To release the brake the lever should be in the position "OFF." When the vacuum is suddenly destroyed in the main pipe the brake is full "ON."

When the guard has occasion (*in emergency only*) to apply the brake he must press down the lever on the valve placed in his van. This admits air throughout the train pipe and the brake is at once applied. The valve in the van opens automatically when the brake is applied violently by the driver and ensures rapid action, but it must, however, not be so applied except in cases of emergency. The guard must see by his gauge that a vacuum of at least 18 inches is maintained; if it falls below this amount he must at once report the fact to the driver.

In the event of a break loose, the continuous brake will be automatically applied, but the guard in the rear van must not rely solely on this, but must put his hand brake hard on and firmly secure it before going back to protect his train.

It is the duty of the fireman, when the engine is attached to the train, to connect the hose coupling on the engine or tank to that on the train; and it is his duty when the engine is detached to place the hose couplings, after disconnecting them, on the respective plugs provided for the purpose. The driver is responsible for this duty being properly attended to by the fireman.

It is the duty of the shunter or porter to connect the hose couplings between the carriages, and to place the hose coupling in rear of the last vehicle on the plug provided for the purpose. The guard is held

responsible for this being done. When trains or carriages are placed in the carriage sheds or sidings at the termination of the day's work, the hose coupling at the end of the train or carriage must be taken off the plug, and the driver, before detaching his engine, must put full steam on the large ejector and blow through for at least one minute while the coupling is off the plug. The coupling can be replaced and the engine detached. The carriage foreman at the Central station and the station inspector at the other stations will be responsible for this being carried out.

When empty trains are left in the temporary sidings in the tunnel east of James Street, or at other places where the gradient is severe, the hand-brakes must be placed hard on before the engines are detached. The guard will be held responsible for this being done.

To release the brakes, after the engine has been detached, the hose coupling at one end of the train must be taken off the plug, the wire fixed under the body of each carriage must be pulled as indicated by the arrows. This admits air to the top side of the cylinder and the brakes fall off by gravity. It is the duty of enginemen in every instance, *before taking their engines out of the shed*, to test the apparatus on both engine and tender, and also when engine is fitted with STEAM BRAKES, whether in addition to the vacuum brake or otherwise, they must be tested with full steam pressure.

Enginemen must always test the continuous brakes, to satisfy themselves that they are in proper working order, after their engines are attached to the trains and immediately before starting.

Drivers must have their trains under such control when approaching terminal stations as will enable them if necessary to stop at the required place, by using only the engine steam brake and guard's hand brake.

METROPOLITAN RAILWAY.

INSTRUCTIONS FOR WORKING THE VACUUM BRAKE.

I. All trains on which this brake is fitted will be controlled by the driver only, unless the guards are specially called upon to apply their brakes by the usual whistle signal.

II. In using this brake, the force to be applied must not exceed 15 inches on the vacuum gauge, and drivers must shut off steam and apply the brake, so that the stoppage can be properly effected with this power.

III. The excess of power beyond 15 inches of vacuum is not to be used except in cases of emergency, such as an unusual stoppage, or accident to train or engine.

IV. Before starting with the train, the driver is to test the connecting pipes to see if they are properly coupled up, by turning steam into the ejector. If all is right, the gauge will show it by the pointer remaining where carried by the vacuum.

V. The use of this brake is intended to give greater certainty in making stoppages, and to prevent the skidding of wheels.—Any driver, therefore, who recklessly runs into a station, and skids the wheels to stop, will be severely punished.

VI. In approaching all terminal stations, viz.:—New Cross, Aldgate, Moorgate (North Dock), Baker Street East, Hammersmith and Richmond, the train must be completely under control before the engine reaches the platform, so that a careful stop may be made, if necessary, by the hand brakes of the engine only; and the guards must be prepared to assist with hand brakes if required. Should it be necessary for the drivers to use the vacuum brake, a special report must be made detailing the circumstances.

VII. Should an engine fitted with this brake have any defect in the ejector or pipes, the driver must,

before starting with the train, give the guard notice that the hand brakes will require to be used, so as to avoid the necessity for calling on him to apply the brake on approaching each station.

VIII. The guard, before starting with a train, must see that the engine is properly fitted with the vacuum brake, as should it not be so the hand brakes must be used in the usual way.

May, 1889.

JOHN BELL,
General Manager.

MIDLAND RAILWAY.

AUTOMATIC VACUUM BRAKE.

This brake can be applied throughout the train by the driver from his engine, or by the guard from his van.

Instructions to drivers.—Before starting from any station, see that your gauge indicates 20 inches of vacuum, and that not less than this amount is maintained during the journey, and while standing at stations.

To apply the brake, open the air valve on the engine.

To release the brake, close the air valve and restore the vacuum to the same amount as existed before the application.

When the engine is attached to the train and the brake pipes are connected, put on the small ejector, and keep it on while at the stations, and during the journey, in order that a constant vacuum may be maintained.

The brake must be applied steadily, which can always be done by opening the air valve gradually; but in a case of emergency the valve must be pulled open suddenly. The large ejector may be used to raise a vacuum rapidly, or when the brake requires to be taken off quickly; but in either case it must be closed gradually.

Instructions to guards.—After the engine is attached to the train the guard in charge must ascertain whether the brake is coupled up and in working order throughout the train, and between the train and the engine. This must be done by lifting the brake valve a *little* in the rear van, when, if there is an inrush of air through the valve, the brake will be all right; but if no inrush takes place, the guard must inform the driver that there is no vacuum in his van.

To apply the brake, lift up the valve, which will admit air throughout the brake pipe, but this is only to be done in a case of emergency. The valve opens automatically when the brake is applied with full force by the driver, and ensures rapid action. See that all pipes between the vehicles are properly coupled together, and that the coupling is on the stop plug at the rear of the train. See by your gauge that a vacuum of 20 inches is maintained, and report, if otherwise, to the driver.

The needle on the left-hand side of the gauge in the guard's van indicates the amount of vacuum in the brake pipe.

The needle on the right-hand side of this gauge indicates the amount of vacuum in the reservoir.

When the brake is applied fully, the needle on the left-hand side will go to "O," and the needle on the right-hand side will only gradually go down as the vacuum in the reservoir leaks away.

The small tap between the two pipes below the gauge will enable the guard to shut off the leakage on the van.

When the handle of the tap is turned to the "leak-off" position, the continuous brake will work the same on the guard's van as on the other vehicles, but when the handle of the tap is turned to the "remain-on" position, the brake will not leak off the van.

In the event of a train becoming divided when going up a rising gradient, the guard must, in addition

to turning the tap to the "remain-on" position, also apply his hand brake tightly, and take such other measures as may be necessary to prevent the vehicles from moving.

No guard or porter must leave the van with the handle of the tap at the "remain-on" position, except in a case of emergency, when it may be necessary to do so.

General Instructions.—Whenever the pipes between the vehicles are disconnected, the couplings must be placed upon the stop plugs at the end of the vehicles.

To couple the hose pipes the porter must take one in each hand and lift them sufficiently high to hook the bottom horns of the couplings together first, and then by lowering them, place the top horns of the couplings in the slots.

To uncouple the hose-pipes the porter must simply lift them straight up, when the horns at the top will come out of the slots, and the couplings will then separate. Porters, when coupling or uncoupling the pipes, must have their hands quite free from cotton waste or anything else that would be likely to be drawn into the pipes by the suction of the vacuum.

To release the brakes for shunting purposes on vehicles fitted with ball valves (the engine having left the train) first see that the hose coupling at one end of the train is off the stop plug and then pull the cord which is fixed under the frame of each vehicle. This admits air to the top side of the cylinder, and the brake comes off by gravity.

When the release-cord or wire has to be pulled for the purpose of taking the brake off, it must always be held by hand until the brake comes off, and must never be fastened over.

WESTINGHOUSE AUTOMATIC AIR BRAKE.

DESCRIPTION AND INSTRUCTIONS FOR WORKING.

Description.

The air used to apply the brake is compressed by a small engine and pump placed on the locomotive. The driver or any of the guards can apply the brake, *and it applies itself in the case of a break-away, or the failure of any of its vital parts.*

The engine, tender, and each of the vehicles of the train are fitted with the following parts:—(1) a triple valve, (2) a supplementary air reservoir, and (3) a cylinder with piston rods; the latter in connection with (4) the brake lever and blocks. Upon the engine a main reservoir also is fitted.

When a train is made up and ready to start, and also when it is running, compressed air stands at equal pressure in the pipe from end to end of the train, and in the triple valve and supplementary reservoir on each vehicle, but in the main reservoir the pressure is about 10 lbs. in excess of that in the train.

The brake is *applied* by a *decrease* of pressure in the main pipe. This causes the triple valves to move down, and to allow the air stored in the supplementary reservoirs to pass instantly into the cylinders, force out the pistons and rods, and cause the blocks to press against the tyres of the wheels.

The brake is *released* by an *increase* of pressure in the main pipe, by allowing air to pass from the main reservoir along the train. This moves the triple valves up, recharges the supplementary reservoirs, and at the same time allows the air which had forced out the pistons to escape into the atmosphere.

Instructions.

Drivers must see (1) that the top, or steam cylinder, is kept well lubricated, (2) that the air cylinder is sparingly lubricated with a small quantity of refined petroleum—*tallow or oil must not be used in the air cylinder*—(3) that the pump is *constantly* run, but never faster than is necessary to maintain the required air-pressure, and (4) *that air from 50 to 60 lbs.*

pressure for stopping trains and from 70 to 80 lbs. pressure for express trains, is carried.

For ordinary stops the brake must be applied lightly, by opening the valve, and closing it gently when the pressure has been reduced from 4 to 8 lbs. on the gauge.

The brakes are fully applied when the pressure shown on the gauge is reduced 25 lbs. Any further reduction would be waste of air.

In releasing the brakes the handle must be moved quite against the stop and kept there for about ten seconds, and then moved back against the intermediate stop, which is the feed position, *where it must remain whilst the train is running.*

Drivers, upon feeling that the brakes have been applied by the guard, or automatically, must at once aid in stopping the train by turning the handle of the brake valve towards the right, thus preventing the escape of air from the main reservoir.

The blocks of the driving wheel brake must be so adjusted by turning the screw that the pistons move up from 3 to 4 inches.

Drivers must be careful to drain the water out of the main reservoir once a week, especially in winter time.

If vehicles having different air pressures be coupled together the brakes will apply themselves on those which have the highest pressure. To ensure the certain release of all the brakes on the train, and also that trains may be charged quickly, the driver must carry the maximum pressure in the main reservoir before connecting to a train, and then put the handle of his brake valve in the release position until the train is charged with air. If the brakes on the engine and tender thus apply themselves by being coupled to a train not charged they must be at once taken off by opening the release valves from the brake cylinders.

Guards.—After making up a train, after attaching or detaching any vehicle, or after another engine has been attached, the rear guard must ascertain whether the couplings are connected, and the cocks in the brake pipe are all open throughout the train, by applying the brakes from his van, and seeing that *they are released from the engine.* If the brake is not in use on the whole train, or if the van is not the last vehicle, the test must be made by opening the cock in the brake pipe of the last vehicle connected.

Guards, when they have occasion to apply the brake from their van, must open the tap and allow the air to escape until the train is brought to a standstill, but they must only use the brake in case of emergency. The tap in the van must again be closed when the train has come to a stand.

The pressure gauge in the van must be observed.

Guards must, in all cases, screw the *hand-brakes clear off* before starting.

General.—Before detaching the engine or any vehicle, the brakes must be fully released on the whole train. Neglecting this precaution, or setting the brakes by opening a valve or tap when the engine is away, may cause serious inconvenience in shunting. The pipes and joints must be kept tight, and when leaks are discovered they must be corrected, if serious, before the vehicle is again used.

The brake pipe has a tap at each end of every vehicle, all of which must be open when the hose couplings are united, except the one in the rear of the train. *These taps must always be opened after connecting the hose couplings, and always closed before separating them.*

If the brakes are applied by the separation of the train, or the breaking of a pipe, they can be released by opening the small release valves or cocks in the brake cylinder or pipes leading thereto. If the brakes are applied after the engine has been disconnected, they can be released as above, or by again connecting to the engine.

The brake of any vehicle can be put out of operation without affecting the others, by closing the tap under that vehicle between the brake pipe and triple valve.

Care must be taken (1) that the brake connections are perfect, and properly adjusted for the wear of the blocks and wheels, by being *uniformly* taken up. The pistons of the double piston cylinders should each travel not less than two nor more than four inches; and those of the single piston cylinders should travel not less than four nor more than eight inches; (2) that the brake cylinders are perfect, and lubricated at least every three months with *mineral oil*; (3) that the hose couplings are united and the cocks in the pipes are open, that is, the handles must stand across or away from the pipe, except the one at the end of the train, which must lie along the pipe in the shut-off position; and (4) that the joints are all air-tight.

When there are upon a train any vehicles fitted with the Westinghouse brake, and that brake is not in use upon such vehicles, the air must be allowed to escape from the cylinders by means of the release taps under the carriages. This is necessary to avoid the brake leaking on, which it has in several cases, and trains have been delayed.

To enable the staff to readily ascertain whether the vehicles supplied with the Westinghouse brake pipe are fitted with the brake apparatus, or with the connecting pipes only, the cock at each end of all vehicles having connecting pipes only has been painted red.

CONTINUOUS BRAKES.

Should it be necessary at any time to send goods guards or porter-guards in charge of the trains, in lieu of the ordinary guards, care must be taken to ascertain that they are conversant with the working of the continuous brake, and with the instructions in connection with it for the guidance of passenger guards.

Instructions to be observed by Guards working with Continuous Brake Trains, and with Trains worked by Engines fitted with Brakes on the Engine wheels as well as the Tender wheels.

When vehicles are supplied with connecting pipes only, they must be considered as vehicles without the brake.

When vehicles not fitted with a continuous brake, or having connecting pipes only, are attached to a train fitted with such brake, or to an engine having the brake on the engine wheels as well as the tender wheels, the guard in the rear van must, immediately upon the continuous or engine brake being applied by the driver, apply his hand brake and keep it tightly on, either until the train has come to a stand, or the driver has taken off his brake, and is again going forward, as the case may be. This arrangement is necessary to prevent the rebound of the vehicles and possible breaking of the draw bars, which may occur when a powerful brake is applied to the front portion of the train only.

When any vehicle or vehicles provided with connecting pipes only, are attached behind the rear van of a train fitted with either the automatic vacuum or the Westinghouse brake, the pipes must be connected in the same way as if such vehicle or vehicles were fitted with the brake.

Instructions to be observed by Carriage Washers.

During frosty weather carriage washers must not allow any wet to remain on the hose pipes or stop-plugs when washing the vehicles, as any water left upon the pipes and plugs would be liable to freeze, and cause inconvenience and delay in fixing the pipes on the plugs.

Continuous Brakes on Scotch Express Trains.

Several of the engines working Scotch express trains are fitted with the Westinghouse and the automatic vacuum brakes, and when a train is being worked by an engine fitted with both brakes, the guard in charge

must ascertain whether there are on the train any vehicles fitted with one brake only, and if there are, the brake which can be applied on the greatest number of vehicles must be used, and the driver must be instructed accordingly.

Westinghouse and Automatic Vacuum Brake Hose Couplings.

When any of the engine or carriage hose couplings burst, or become defective, on the road, the driver must draw his train under the protection of the nearest fixed signals while the defective pipe is replaced or repaired by the fireman. In the case of a Westinghouse brake coupling becoming defective, a new one must be substituted for it, and burst or damaged automatic vacuum brake couplings must be wrapped with canvas and tarred string so as to cover the defect.

Padlocks for securing Automatic Vacuum Brake Valves in Brake Compartments of Midland City and Suburban Trains in which no Guard is riding.

A staple is fixed in each brake compartment of Midland city and suburban trains, under the lever of the automatic brake valve, a chain being attached to the lever, and guards are supplied with padlocks and keys for the purpose of fastening the lever to the staple by means of the chain, when no guard is riding in the brake compartment.

Guards will be held responsible for fastening the lever by padlock when necessary, and station-masters must, from time to time, satisfy themselves by personal observation that this instruction is carried out.

G. and S. W. Vehicles fitted with the Automatic Vacuum Ball-Valve Brake.

The position of the cord or wire for releasing the brake on G. and S. W. vehicles fitted with the automatic vacuum ball-valve brake is indicated by a V.

Attaching another Company's Vehicles to Midland Passenger Trains.

The continuous brake in use on London and North-western, Great Northern, Manchester, Sheffield, and Lincolnshire, North Stafford, and Caledonian vehicles will not work in unison with the Midland automatic vacuum brake.

When a London and North-Western vehicle fitted with the continuous brake apparatus is attached to a Midland passenger train, the lever on the under frame must be moved to the "cut-off" position, which will prevent the brake from working on the vehicle, and the pipes may then be coupled up in the ordinary way to preserve the continuity of the brake.

On North Stafford vehicles fitted with the continuous brake apparatus there is a handle, painted red, placed at each side of the vehicle, near the centre, and close under the frame, the object of which is to cut off the connexion between the train pipe and brake cylinder. This handle forms part of a rod extending across the vehicle and provided at each end with three notches. When a North Stafford vehicle has to be attached to a Midland passenger train, the handle must be pulled or pushed into one of the end notches. This will put the brake out of use on the vehicle, and the pipes may then be coupled up in the ordinary way to preserve the continuity of the brake.

When it is necessary to attach to a Midland passenger train a Great Northern, Manchester, Sheffield, and Lincolnshire, or Caledonian vehicle fitted with the brake apparatus, the brake on such vehicle must not be connected with the brake on the train, and the vehicles must be placed as near the end of the train as circumstances will permit. When the vehicles are fitted with connecting pipes only, and the couplings are suitable, the pipes must be coupled in the ordinary way to preserve the continuity of the brake.

These instructions will also apply to North-Eastern vehicles fitted with the London and North-Western description of brake, and in order to distinguish these vehicles from North-Eastern vehicles fitted with the Midland description of brake, labels, as shown below, will be placed on each of the four corners of the vehicles, immediately above the frames.

No. 1. L. & N.-W.	This brake will work with the L. & N.-W.
No. 2. MIDLAND.	This brake will work with the Midland.
No. 3. ALL.	Handle in centre notch applies L. & N.-W. Brake. Handle in other notches for pipe connexions only.

NORTH-EASTERN RAILWAY.

Instructions as to working the Westinghouse and Smith's Vacuum Continuous Brakes.

WESTINGHOUSE BRAKE.

Description.

Compressed air is the agent employed to apply the brake. On the engine there is a donkey pump for compressing air into a main reservoir. There are two brake cylinders for the driving wheels, except in the case of a few engines fitted with only one 10-inch cylinder, there is one for the tender, and one for each other vehicle. A single line of pipe extends the entire length of the train. On the engine, tender, and each vehicle is a triple valve having one connection with main pipe, a second connection to a reservoir on each carriage, and a third connection to the brake cylinder. The pipe from the main reservoir leads to a valve, and thence back under the tender. This valve is operated by the driver, who, by the movement of the handle in one direction, admits air to the main pipe from the main reservoir in order to charge the small reservoirs and release the brakes when they are applied, and by moving it in the opposite direction, discharges air from the brake pipe to the atmosphere, and so applies the brakes. If a train breaks in two, the couplings come apart so as to permit the escape of air, and the consequent application of the brakes. Similarly, if the pipe is fractured, the brakes are at once applied.

The operation is as follows:—The pump is started and air is compressed into the main reservoir. When the engine is coupled to the train, air passes into the pipe, triple valve, and reservoir on each carriage, charging all equally.

To apply the brakes, the pressure is lowered in the brake pipe by the driver operating his valve. This causes the triple valve to move so as to open a passage for the compressed air from each reservoir to its brake cylinder, the piston of which applies pressure to the levers and brake blocks.

The brakes are fully set when the pressure shown on the gauge is reduced 25 lbs.; any further reduction is a waste of air.

The brakes are released by admitting air from the main reservoir to the brake pipe, which re-charges the pipe and triple valves and reservoirs, whilst at the same time a passage is opened from each cylinder to the atmosphere. A cock is placed between each triple valve and the main pipe, so that the brake on any particular carriage can be put out of use. The brakes of the detached portion of a train, if applied, can be released by holding open a valve on each brake cylinder. These release-valves close automatically when not held open to release the brakes. There

is a cock in each van to apply the brakes, and a gauge on the engine and in each van to indicate the pressure in the main pipe; there is also a gauge on the engine to indicate the pressure in the brake cylinder.

INSTRUCTIONS.

Drivers must see (1) that the top or steam cylinder of the air pump is kept well lubricated, (2) that the air cylinder is sparingly lubricated with the lubricator provided for the purpose, (3) that the pump is constantly run, but never faster than is necessary to maintain the required air-pressure, and (4) that air from 60 to 65 pounds pressure is carried.

NOTE.—The governor valve (that is, the valve which regulates the pressure in the pipes leading to the brake cylinders) will stop the action of the pump when the necessary pressure is obtained, but the pump should again act as soon as the air pressure in the pipes is reduced below the pressure necessary for the proper working of the brakes. To insure this the steam cock in communication with the governor valve should always be kept fully open.

The pressure in the pipes leading to the brake cylinders must be regulated by the governor valve to suit the speed of the train and the gradients it is to work over.

For ordinary stops the brake should be applied lightly, by turning the handle of the driver's valve to the right, and gently closing it again, after a reduction of pressure in the brake pipe, of not less than 5 lbs., nor more than 8 lbs., has been made. If the pressure runs up on the gauge when the handle is brought back, it shows that the valve has been shut too quickly.

In ordinary working the brakes are fully applied when the pressure shown on the gauge is reduced 25 lbs. Any further reduction is waste of air. In case of emergency, however, the handle must be turned so as to let all the air in the brake pipe escape. Long trains require more careful handling than short trains, and a greater quantity of air must be discharged from the brake pipe to make the same reduction per square inch on the gauge. The driver, before starting, must ascertain the number of vehicles on the train, and the number working with brakes or pipes only.

In releasing the brakes, the handle should be kept in released position until the pointer of the indicator shows signs of rising, and then be moved back against the intermediate stop, which is the feed position, *where it must remain whilst the train is running.*

The driver must always satisfy himself that the brake coupling on his engine is properly connected to that on the train, and that the *cocks in the brake pipe, except the one at the rear of the last vehicle connected with the brake are open.*

The blocks of the driving-wheel brake should be so adjusted, by turning the screw, that the pistons travel from 3 to 4 inches.

The driver must be careful to drain the water out of the main reservoir once a week, and in frosty weather more frequently.

If vehicles having different air pressures be coupled together, the brakes will apply themselves on those which have the highest pressure. To ensure the certain release of all the brakes in the train, and in order that the train may be charged quickly, the driver must carry the maximum pressure in the main reservoir before connecting to the train. When coupled to the train he must put the handle of his brake valve in the release position until the train is charged with air, and this is shown to have taken place when the pointer of the indicator begins to rise. If the brakes on the engine and tender are found to apply themselves when the engine is coupled to a train not charged, they should at once be taken off by opening the release valves from the brake cylinders.

After connecting the engine to the train, or after new vehicles have been added, the pipes and reservoirs should be charged as quickly as possible. The brakes should then be applied with full force by the driver,

who should not start away until the inspector or guard has signalled that the brakes are acting on all the vehicles.

The driver, before commencing a journey, must inform the guard whether the engine is fitted with the brake apparatus or not, in order that he may know how to act as to the use of the hand brakes.

Should the driver discover any defect in the working of the brake which will render it ineffective, he must at once give the guard notice, and arrange with him as to the use of the hand brake in the van, when necessary.

In running into stations with block ends, and at junctions where he has to stop, and also when moving up to attach his engine to a train, the driver must not rely upon the continuous brake, but must so regulate the speed of his engine that the ordinary application of the hand brakes on the engine and tender will be sufficient to bring the train or engine to rest. In ordinary stoppages at stations, the driver must use the brakes so as to stop the train without any jerk.

The brakes must not be used with more than half their force, except in cases of emergency.

When working the Westinghouse brake with two engines coupled together, the driver of the leading engine must take charge of the brake, and he must work it as he would on an ordinary train, not considering the second engine, except as a vehicle.

The driver of the second engine must keep his handle in the neutral position, and the donkey pump working; by this means he shuts off all communication from the main reservoir to the main pipe of the train.

The driver, on finding that the brakes have been applied by the guard, or automatically, must at once aid in stopping the train by turning the handle of the driver's valve towards the right, thus preventing escape of air from the main reservoir.

The driver must enter on his engine ticket all cases of irregularity in the working of the brakes.

Guards.—Before leaving the terminus, after adding to a train on the journey, or on another engine being attached, the rear guard must ascertain whether the couplings are connected, and the cocks in the brake pipe are all open throughout the train, by applying the brakes from his van and seeing that *they are released from the engine.* In making this test the pressure of air in the pipes, as shown by the indicator, should not be reduced more than is absolutely necessary. If the brake is not in use on the whole train, or if the van is not the last vehicle, the test should be made by opening the cock in the brake pipe of the last vehicle connected.

A guard, when he has occasion to apply the brake from his van, must open the tap and allow the air to escape until the train is brought to a standstill, but he should only use the brake in cases of emergency.

The guards must in all cases screw the *hand brakes clear off* before starting.

The guard must enter on his report all cases of irregularity in the working of the brakes.

Inspectors (Locomotive Department).—Inspectors must see (1) that the brake connections are perfect and properly adjusted for the wear of the blocks and wheels by being *uniformly* taken up. The pistons of double piston cylinders should each travel not less than two, nor more than four inches. Those of single piston cylinders should not travel less than four, nor more than eight inches; (2) that the brake cylinders are perfect and lubricated at least every three months with *mineral oil*; (3) that the hose couplings are united, and the cocks in the pipes, except the one at the rear of the last vehicle connected with the brake, are open, that is, the handles must stand across or away from the pipe except the one at the end of the train, which must lie along the pipe in the shut-off position; (4) that the joints are all air-tight.

General.—Before detaching the engine or any carriages, the brakes must be fully released on the whole

train. Neglecting this precaution, or setting the brakes by opening a valve or tap when the engine is away, may cause serious inconvenience in shunting. The pipes and joints must be kept tight, and when leaks are discovered they should be corrected, if serious, before the vehicle is again used.

The brake pipe has a tap at each end of every vehicle, all of which must be open when the hose couplings are united, except the one at the rear of the train. *These taps must always be opened after connecting the hose couplings, and always closed before separating them.*

If the brakes are applied by the separation of the train, or the breaking of a pipe, they can be released by opening the small release valves in the brake cylinder, or pipes leading thereto. These taps, after the release of the brakes, must be closed.

If the brakes are applied after the engine has been disconnected, they can be released as above, or by again connecting to the engine.

The brake of any vehicle can be put out of operation without affecting the others, by closing the tap under that vehicle, between the brake pipe and triple valve.

No person must tamper with the tap in the brake van, as by so doing the brake is instantly applied, and cannot be taken off again except by opening the cock under each carriage, or by attaching the engine to the train.

H. TENNANT,
General Manager.

November 1884.

SMITH'S VACUUM BRAKE.

Description.

Atmospheric pressure is employed to work the brake. An annular steam ejector is fixed on the engine, and attached to it is a main pipe running the full length of the train. A sack or compressible cylinder is fixed on the engine, two are fixed on the tender, and two on each vehicle. One end of the cylinder is secured to the framing, and the other to a system of bars, connected with the brake blocks. Branch pipes connect the cylinders with the main pipe. When steam passes through the ejector, a partial vacuum is formed in the cylinders, and they tend to collapse; they are so constructed that they can only be compressed vertically, and on being compressed they apply the brakes.

There is a driver's valve to work the ejector, a flap valve to release the brakes, and a vacuum gauge indicating the extent of the partial vacuum formed in the cylinders.

The operation is as follows:—Steam is allowed to escape through the ejector by the driver opening the valve, which exhausts the air in the main pipe and cylinders. The cylinders collapse under the pressure of the atmosphere and apply the brakes.

The brakes are released by stopping the steam passing through the ejector and opening the flap valve and admitting air into the main pipe and cylinders.

Instructions.

Trains on which this brake is fitted will be controlled and worked by the driver only, unless the guards are specially called upon by the usual whistle signal, to apply their hand brakes.

In using this brake, the force to be applied must not exceed 15 inches on the gauge, and drivers must shut off steam and apply the brake, so that the stoppage can be properly effected by this power.

The excess of power beyond 15 inches of vacuum must not be used except in cases of emergency.

Before starting with a train, the driver must test the connecting pipes to ascertain if they are properly coupled up, by working the ejector. If all is tight, the gauge will show it by the pointer remaining where carried by the vacuum.

The use of this brake is intended to give greater certainty in making stoppages, and the driver must be careful not to run into a station at such a speed as to render it necessary to skid the wheels in order to bring the train to a stand.

In running into stations with block ends, and at junctions where he has to stop, and also when moving up to attach his engine to a train, the driver must not rely upon the continuous brake but must so regulate the speed of his engine that the ordinary application of the hand brakes on the engine and tender will be sufficient to bring the train or engine to rest. In ordinary stoppages at stations the driver must use the brakes so as to stop the train without any jerk.

Should an engine fitted with this brake have any defect in the ejector or pipes, the driver must, before starting with the train, give the guard notice that the hand brake will require to be used, so as to avoid the necessity for calling on him to apply his brake on approaching each station.

The driver, before starting, must inform the guard whether the engine is fitted with the brake apparatus or not, in order that he may know how to act as to the use of the hand brakes.

The driver must enter on his engine ticket, and the guard on his report, all cases of irregularity in the working of the brakes.

H. TENNANT,
General Manager.

November 1884.

NORTH STAFFORDSHIRE RAILWAY.

VACUUM BRAKE.

Instructions to Enginemen and Guards.

Description.—Each carriage and van is fitted with a vacuum brake, which can be applied by the driver only.

Small Vacuum.—As soon as a driver hooks on to the train, he must bring the vacuum gauge to "right," by a puff of the big ejector, and set the small ejector so as to constantly maintain the gauge in that position, whether running or standing.

Vacuum Brake.—The vacuum brake is applied by pulling the handle on the brake valve until the catch comes against the first stop.

To apply the steam brake on engine and tender as well as the vacuum brake on the train the handle must be pulled right over.

Steam Brake.—To apply the steam brake only, the handle on the brake-valve must be pushed to the end of slot, instead of pulled.

Enginemen are instructed that in all cases of ordinary stoppages they must shut off steam, and reduce the speed of their train at the usual place where they would do so with a train fitted with the ordinary hand brakes, and it must be clearly understood that they must not use the vacuum brake to its "full extent," unless it is necessary to stop very quickly.

No excuse of the failure of the vacuum brake will be taken in cases of overshooting platforms.

Guards' Brakes.—Each van is fitted with a hand brake, to be applied by the guards in case the vacuum brake fails; should the vacuum not be maintained the bells in the guards' vans will ring and the indicators show wrong.

The vacuum brakes throughout the train being under control of the driver, the use of the "hand brake" in the vans is not required in making an ordinary stop. But guards must be prepared to apply the "hand brake" immediately on its being called for by the driver's whistle.

The driver will before starting from a terminal station, and also before leaving any station where a vehicle has been attached or detached to the train, test the vacuum brake, and the guard in charge of the

rear van must see that the indicator in his van shows "right," and signal the driver that it is so, by *showing him a white flag by day and a white light by night*, which must be repeated by the driver giving a *hand signal* to the guard by day, and showing him a *white light by night*.

June 1884.

By Order.

INSTRUCTIONS FOR WORKING THE AUTOMATIC VACUUM BRAKE.

Description.

The Automatic Vacuum Brake is continuous throughout the train, each vehicle carrying its own brake power. Should a train fitted with this brake become divided when running, the disconnections of the hose-pipe will cause the brake to go on throughout each portion of the train.

The brake power available depends upon the amount of vacuum maintained by the driver, and not less than 18 inches vacuum must be maintained in the rear van of the train whilst in motion.

The brake is applied by the driver admitting air to the main train pipe, and this can also be accomplished in case of emergency by the guard pressing down the lever of the valve fixed on the iron pipe in the van.

When a sudden application of the brake is made by the driver the valve in each guard's van will open automatically, thereby admitting air to the main train pipe, thus ensuring a rapid application of the brake.

There is a gauge in each guard's van showing the amount of vacuum in the train pipe and in the reservoir underneath each carriage.

The brake is released by the driver re-creating the vacuum throughout the train, and when the engine is detached the brake can be released by pulling the wire which will be found underneath the carriage frame, and which must be held back until the brake is fully off. Care must be taken to see that the hose-pipe is taken off the plug at one end of the train.

Whenever the pipes between the vehicles are disconnected the couplings must be placed on the plug at each end of the vehicles.

Action of the Brake.

The engine having been hooked on to the train, and the hose couplings between the tender and the train, also those between the coaches connected, and the one at the end of the train placed upon the plug, the driver will admit steam to the *large* ejector to exhaust the train pipe and cylinders to a vacuum of 22 inches, which must be maintained throughout the journey and whilst standing at stations, the small ejector only being used in case of the air pump failing to act.

To apply the brake the driver admits air to the train pipe by opening the brake-valve.

To release the brake the driver will close his brake-valve and admit steam to the large ejector.

When the brake is applied, the pressure of the brakes on the wheels may be increased or diminished at pleasure without removing them, and also without reducing the full reserve power which is always at command for an emergency stop.

Station stops should not be made by violent application of the brake, but by a destruction of vacuum of from 5 to 10 inches, which should be re-created slowly as the train comes to a stand, in order to prevent jerking at the end of the stop.

To apply the brake quickly the driver must open the brake-valve to the full extent.

The guard can apply the brake by pressing down the handle of the valve placed in the van, but this must only be done in extreme cases of emergency.

The guard must see whilst running or standing at stations that a vacuum of at least 18 inches is maintained in the van, or report otherwise to the driver.

It will be the duty of the guard to see that the couplings between the carriages are properly connected, and that the coupling of the last coach is placed on the plug.

To release the brake for shunting purposes (the engine having left the train) first see that the hose coupling at one end of the train is off the plug, then pull the wire underneath the frame of each carriage, which must be held back until the brake is fully off.

W. D. PHILLIPPS,

Traffic Manager.

Stoke Station,
January 1890.

SOMERSET AND DORSET JOINT RAILWAY.

THE VACUUM AUTOMATIC BRAKE, COMBINED WITH STEAM BRAKE ON ENGINE.

This brake can be applied throughout the train by the driver from his engine or by the guard from his van.

Drivers' Instructions.—Before starting, see that your gauge indicates 21 inches of vacuum. This is done by admitting steam to the small ejector by means of a 'steam cock placed for that purpose. The small ejector must always be kept working, whether attached to a train or not. To apply the brake, move the lever on the combination ejector to "brake on." In ordinary running this lever must stand at "running position." To release the brake, move the lever to position "brake off," and restore the vacuum to the same amount as before the application. When the vacuum is suddenly destroyed in the main pipe the brake is full "on." When separated from your train, see that the couplings are placed upon the dummies fixed for that purpose, and when attached to a train, that the pipes between engine and carriage are properly coupled up.

Guard's Instructions.—To apply the brake, press down the lever on the valve placed in the guard's van. This admits air throughout the train pipe, and is only to be employed in cases of emergency. This valve opens automatically when the brake is applied with full force by the driver, and ensures rapid action. See that all pipes between carriages are properly coupled together, and that the couplings on the end coaches are placed upon the dummies. See by your gauge that a vacuum of 21 inches is maintained. Report otherwise to driver.

General Instructions.—To release the brakes for shunting purposes (the engine having left the train), first see that the hose coupling at one end of the train is off the dummy, then pull the cord which is fixed under the body of each carriage, as indicated by the arrows. This admits air to the top side of the cylinder, and the brakes come off by gravity.

S. W. JOHNSON,

Loco. Superintendent.

R. A. DYKES,

Traffic Superintendent.

August 12th, 1885.

NOTICE to ENGINEMEN and FIREMEN.

Testing of Brake Apparatus on Engine and Tender.

It is the duty of engine-men in every instance, before taking their engine out of the shed, to test the brakes on both the engine and tender, as directed below, so as to satisfy themselves that they are in efficient working order.

AUTOMATIC VACUUM BRAKE.

Before leaving the shed or starting on a journey, the driver must test the action of both the large and small ejector, each in its turn separately, and satisfy himself that the joints of the pipes on the engine are tight, and the ejectors in working order. Should the fall

of vacuum be very rapid, the joints must at once be examined to discover the leakage, and in order to draw out any water that may have accumulated in the engine or tender brake pipes, the engineman, both before leaving the shed, and on his return at the end of his day's work, must take off the hosepipe coupling from the dummy and use the large ejector freely, which can be done by putting the handle over to "On." All drain valves and pipes in connection with the brake apparatus must be kept free and in working order.

Enginemen must always test the continuous brakes, and ascertain for themselves if they are in good working order when the engines are coupled up to the train, and immediately before starting on a journey.

S. W. JOHNSON,
Loco. Superintendent.

Derby,
12th August, 1885.

SOUTH-EASTERN RAILWAY.

VACUUM CONTINUOUS BRAKE AND VACUUM AUTOMATIC BRAKE.

Certain trains, as may be arranged, are now fitted with continuous air brakes, applied from the engine. The working of these by the enginemen will not relieve the guards from any responsibility. They must keep a good look-out, and apply the hand brakes should any necessity arise, as if the trains were not fitted with the continuous brake.

The hand brakes are always to be applied by the guards whenever the train is stopped by signal, or at any intermediate station, other than where appointed to call.

Station-masters, inspectors, and foremen must give special attention to the proper coupling of the air brake pipes, and make such arrangements as will prevent these pipes being in any way improperly used.

The guards must see that the pipes of the air brakes on their trains are properly coupled together before starting, and whenever any engine or vehicle is attached or detached; and they must, frequently during the journey, examine the pipes and see they are in good order, and remain properly coupled together.

Brake vans and carriages which are fitted with the continuous brake apparatus must be kept for use in the continuous brake trains, or as through carriages in branch trains in connection with the continuous brake trains, and any spare brake-vans and carriages which are fitted with the continuous brake apparatus must be worked up to Rotherhithe Road Carriage Depot.

When vehicles fitted with a continuous air brake are left in sidings or at stations, the brake pipes of each vehicle must be coupled together, and not left hanging loose. Porters and others are cautioned that in passing between vehicles *they must not step upon the brake pipes*, nor in any way interfere with the connections.

Guards must enter on their journals whether their trains were worked with the continuous brake, and full particulars of any defect, failure, or unsatisfactory working of the brake of their train, or any portion of the fittings, couplings, &c.

At terminal stations the ordinary stopping must be done by the hand brakes, and the vacuum brake only used by the driver when he sees that the hand brakes will fail to stop the train at the proper place.

Drivers must not depend on the brake until they have tested and found it to work properly. For this purpose they will test the brake on the first opportunity after starting, and also occasionally during the journey when approaching any station at which the train stops, also when approaching junctions, and before descending sharp inclines.

The "Vacuum" brake must not be used for stopping the tidal trains when running from the main line to the Folkestone Harbour Branch at Folkestone or when running trains to the Admiralty Pier at Dover. The train must be brought to a standstill by the hand brakes.

Additional Instructions applying to the Vacuum Automatic Brake.

This brake can be applied throughout the train by the driver from his engine, or by the guard from his van.

Drivers' Instructions.—Before starting see that your gauge indicates at least 18 inches of vacuum. This is done by admitting steam to the small ejector by means of a steam cock placed for that purpose. To apply the brake move the lever on the combination ejector to "on." In ordinary running this lever must stand at "running position." To release the brake move the lever to position "off." *When the vacuum is suddenly destroyed in the main pipe the brake is full "on."* When separated from your train see that the couplings are placed upon the dummies fixed for that purpose.

Guards' Instructions.—To apply the brake press down the lever on the valve placed in the guard's van. This admits air throughout the train pipe, and is to be only employed in cases of emergency. This valve opens automatically when the brake is applied with full force by the driver, and ensures rapid action. See that all pipes between carriages are properly coupled together, and that the couplings on the end coaches are placed upon the dummies. See by your gauge that a vacuum of 18 inches is maintained. Report otherwise to driver.

General Instructions.—To release the brakes for shunting purposes (the vehicles having been detached from the engine), first see that the hose coupling at one end of the train (or vehicle) is off its dummy, then pull the cord or wire which is fixed underneath the body of each carriage as indicated by the arrows. This operates the release valves and admits air to the top side of the cylinder, and the brakes come off by gravity.

This valve must be held open until the pistons have dropped to their full limit.

CALEDONIAN RAILWAY.

Description and Instructions as to the working of Continuous Automatic High-pressure Air Brakes for Passenger Trains.

THE WESTINGHOUSE SYSTEM.

Description.

The air used to apply the brake is compressed by a small engine and pump placed on the locomotive. The driver or any of the guards can apply the brake, *and it applies itself in the case of a break-away, or the failure of any of its vital parts.*

The engine, tender, and each vehicle of the train is fitted with the following parts:—(1) a triple valve, (2) a supplementary air reservoir, and (3) a cylinder with piston-rods; the latter in connexion with (4) the brake lever and blocks. Upon the engine a main reservoir also is fitted.

When a train is made up and ready to start, and also when it is running, compressed air stands at equal pressure in the pipe from end to end of the train, and in the triple valve and supplementary reservoir on each vehicle, but in the main reservoir the pressure is about 10 lbs. in excess of that in the train.

The brake is *applied* by a decrease of pressure in the main pipe. This causes the triple valve to move down, and to allow the air stored in the supplementary reservoirs to pass instantly into the cylinders, force out the pistons and rods, and cause the blocks to press against the tyres of the wheels.

The brake is released by an increase of pressure in the main pipe, by allowing air to pass from the main reservoir along the train. This moves the triple valves up, re-charges the supplementary reservoirs, and at the same time allows the air which had forced out the pistons to escape into the atmosphere.

Instructions.

Drivers must see (1) that the top or steam cylinder is kept well lubricated; (2) that the air cylinder is sparingly lubricated with a small quantity of paraffin—*tallow or oil must not be used in the air cylinder*; (3) that the pump shall be *constantly run*, but never faster than is necessary to maintain the required air pressure; and (4) *that air of 75 lbs. pressure is carried*.

For ordinary stops the brakes should be applied lightly by turning the handle of the driver's valve to the right, and gently closing it again, after a reduction of pressure in the brake pipe of not less than 5 lbs. nor more than 8 lbs. has been made. If the pressure runs up on the gauge when the handle is brought back, it shows that the valve has been shut too quickly. Just before coming to a stand the brakes should be released, so as to avoid any jerk.

Drivers must exercise care and moderation in applying the brakes for ordinary stops, so as to bring their trains to rest without inconvenience to the passengers, and the brakes must not be used with more than half their full force, except in cases of emergency.

The brakes are fully applied when the pressure shown on the gauge is reduced 25 lbs. Any further reduction would be waste of air. *In case of emergency, however, the handle must be turned so as to let all the air in the brake pipe escape.*

Long trains require more careful handling than short trains, and a greater quantity of air must be discharged from the brake pipe to make the same reduction per square inch on the gauge.

In releasing the brakes the handle must be moved quite against the stop, and kept there for about *ten seconds*, and then moved back against the intermediate stop, which is the feed position, and *where it must remain whilst the train is running*.

Drivers, upon feeling that the brakes have been applied by the guard, or automatically, must at once aid in stopping the train by turning the handle of the brake valve towards the right, thus preventing escape of air from the main reservoir.

Drivers and firemen are *at all times* responsible for having all the couplings between the engine and the first vehicle of the train properly connected, and that the cocks in the brake pipe are open; and before starting, and at intermediate stations where the composition of the train has been altered, must ascertain from the guard the number and position of brake-fitted vehicles connected with the engine, and be guided on the journey in the application of the brake accordingly. Also, before starting, the air must be raised to the full pressure at which it is to be worked during the journey, and the brakes applied with full pressure and taken off, in order to properly test the several pipes and connexions. This operation to be repeated after the guard tests the brake from the van, to ensure all the brakes coming properly off.

The blocks of the driving wheel brake should be so adjusted by turning the screw, that the pistons move up from 3 to 4 inches.

Drivers must be careful to drain the water out of the main reservoir once a week, especially in winter time.

If vehicles, having different air pressures, be coupled together, the brakes will apply themselves on those which have the highest pressure. Drivers should, therefore, keep the handle of their brake valve in the neutral position until their train is all coupled up. To ensure the certain release of all the brakes in the train, and also that trains may be charged quickly, the driver must carry the maximum pressure in the main reservoir before connecting to a train, and then

put the handle of his brake valve in the release position until the train is charged with air. If the brakes on the engine and tender thus apply themselves by being coupled to a train not charged, they should at once be taken off by opening the release valves from the brake cylinders, which ought to be *so arranged as to be worked from the footplate*.

Ordinary stoppages must not be made too quickly, *particularly* when the train is not fitted with the continuous brake throughout. In such cases the guard will apply the rear hand brake for ordinary stoppages, and also on being warned by the driver by whistle, and when drivers have given the signal "brakes on" in cases where the train is not to be brought to a stand, care must be taken to give the whistle "brakes off" before altogether releasing the continuous brake or putting on steam.

When approaching *terminal stations*, particularly on *falling gradients*, *great care* must be exercised to have the train so under control with the air brake, that, if required, it could be stopped by the *tender hand brake only* before the engine reaches the *station buffers*. This must also be very carefully observed in the case of trains that arrive in *docks*, and behind other trains in through stations.

Pilot engines assisting in front must be coupled to the train engine as closely as practicable, and the driver of the leading engine must not put on steam until the steam of the train engine is on, whether this may be in starting or for the purpose of increasing the speed after the steam has been shut off, neither must the tender brake of the leading engine be applied until the train brake is on, and when it is applied, it must not be released until the train brakes are entirely off.

In all cases of two engines being coupled together and fitted with the Westinghouse brake, the brake couplings must be connected, and the driver of the leading engine take full control of the brake power of the train; and the driver's valve of the *train engine* must be placed and *remain in the neutral* position, so as to cut off the communication from the main reservoir of that engine to the train pipe.

The indicator on the train engine will then only show the pressure the leading engine is maintaining in the train pipe. It is essential that the *pressure* in the main reservoir of the *train engine* be *kept above* that in the *train pipe*, otherwise the brakes will apply themselves by air escaping from the train pipe past the driver's valve to this main reservoir.

The air pump of the train engine must, therefore, be kept slowly and steadily working, independent of the pressure shown on the indicator.

The driver of the train engine to take no action in the ordinary stoppages, but must be, at all times, prepared to apply the brake in cases of emergency.

Guards.—Before starting, and at intermediate stations, where the composition of the train is altered, must, in order to guide them on the journey in the application of the brake, make themselves thoroughly aware, personally, of the number of brake-fitted and non-fitted vehicles in the train, and how many of the fitted vehicles are connected with the engine, and must go forward to the driver and give him this information. When there is more than one guard with the train, this will be the duty of the head guard.

The guard in charge, before starting from a terminal station, or after making up a train, or after attaching any vehicle to a train, or detaching any vehicle from a train, or after a fresh engine is attached, shall ascertain whether the brake is connected throughout the train by allowing a little air to escape from the tap in the rear van, reducing the pressure 5 or 10 lbs., after which the pressure indicator in the van *should again rise* to prove that the air pipes are open throughout from the engine. Should the pressure *not* rise again in the indicator, the guard must give the driver a red signal, and both driver and guard must at once ascertain the cause and have it put right. When the pressure does rise, the guard must give a white signal,

and the driver must then apply the brake with full force, and, after allowing it to remain on eight or ten seconds, must quickly release it, to ensure it coming properly off all of the vehicles.

The signal by the guard to be given with a flag by day and with a hand lamp by night.

If the brake is not in use on the whole train, or if the van is not the last vehicle, the test should be made by opening the cock in the brake pipe on the rear end of the last vehicle connected.

When a train has any vehicles not fitted with the continuous brake, or fitted with the pipe connexion only, guards must apply their hand brakes at all ordinary stoppages, and must be prepared to apply them as efficiently as possible on being warned by the driver by whistle, and they must not be taken off until the driver gives the whistle "brakes off," or until all the vehicles of the train have *completely* come to a state of rest—including the rebound, if any, of the carriage buffers—and when the hand brake is being released it must not be allowed to fly off, but must be taken off slowly.

In all cases of trains, whether fitted or not fitted with continuous brakes, arriving at terminal stations and in docks, and behind other trains in through stations, guards must apply their hand brakes as far as is necessary to assist in stopping at the proper place.

Guards, when they have occasion to apply the continuous brake from their van, must open the tap and allow the air to escape until the train is brought to a stand, but they should only use the continuous brake in cases of emergency.

Guards must in all cases take the *hand brakes clear off* before starting.

General.—It is the duty of the staff at stations where trains are made up, and where vehicles are attached or detached, to adjust the couplings and air pipes properly, and to be most particular in screwing all of the vehicles *tightly* together, and it is the duty of the fireman to attach the engine to the train before starting, and to detach it at the end of the journey. When the engine requires to be detached at any station for shunting purposes, it is the duty of the station staff to do so, and to do *all* attaching and detaching of the engine, except in cases of the staff being limited or otherwise engaged, when the fireman must perform the duty at the request of the person in charge. It is the duty of the fireman when the engine is brought back to the train preparatory to starting to attach it properly to the train.

In cases where there are vehicles not having the necessary fittings to be put on to a train, those with the continuous brake must be placed continuously next to the engine, so that the largest possible measure of brake power may be available.

Horse boxes, carriage trucks, and other passenger vehicles have been fitted with pipes for conveying air to the other vehicles of any train of which they may form a part, and a number of the older class of brake vans and carriages have also been fitted with pipes which have no connexion with the brakes on the vehicles themselves. All such vehicles will be distinguished by having a *knob* on the handles of the cocks, which are on the main pipe at the ends of the vehicles, and must be carefully noted by the guard before starting trains from terminal stations, or intermediate stations where vehicles are attached or detached, who must inform the driver.

The brakes of any vehicles can be put out of operation without affecting the others by closing the taps under those vehicles between the brake pipe and triple valve.

To prevent the valve in the guards' brake vans being tampered with, neither Company's servants (unless duly authorised) nor passengers must be allowed to travel in the brake vans, and those unoccupied must be locked up.

The main pipe is fitted with a stop-cock at the end of each vehicle, the cocks are *open* when the handles are standing across or away from the pipe, and shut

when the handles are up or alongside the pipe. *Upon no account must any train be started from a station without all of these cocks being open, except the cock on rear end of the last connected brake vehicle, and when the train has to be separated for attaching or detaching, or taking off the engine, the stop-cocks where the separation is to take place must be shut before the flexible pipes are disconnected, and when the train is made up again the flexible pipes must be connected before the cocks are opened.*

If the brakes are applied by the separation of the train, or the breaking of a pipe, they can be released by opening the small release valves in the brake cylinder or pipes leading thereto, which is done by pulling a wire attached to both sides of the frame of the carriage. If the brakes are applied after the engine has been disconnected, they can be released as above or by again connecting to the engine.

When at any time a train charged with air has to be worked by a locomotive not fitted with the continuous brake, or part of the train is cut off from the locomotive by intervening vehicles not fitted with brake pipes, the staff at stations, and guards at places where there is no station staff, must allow the air in the vehicles cut off to escape by first allowing all the air in the main pipe to escape, and afterwards opening the release valve on each vehicle.

Before detaching the engine or any vehicles, the brakes must be fully released on the whole train. Neglecting this precaution, or setting the brakes by opening a valve or tap when the engine is away, may cause serious inconvenience in shunting. Under these circumstances, guards must give special attention to their hand brakes.

At stations where the composition of trains is altered, the staff must be careful to see that all the brakes are clear off, and no train must be allowed to leave with the air brakes on any part however slight. Drivers must stop if they feel the train is being retarded, and have the brakes properly released.

The pipes and joints must be tested with screw-key, where necessary, and kept air-tight, and, when leaks are discovered, they must be corrected, if serious, before the vehicle is again used.

The hose coupling, when not used for connecting the brake between two vehicles, must be attached to the hook provided.

Any defect occurring in the working of continuous brakes must be pointed out by the guards or drivers immediately on arrival at—

Carlisle,	Stirling,
Beattock,	Oban,
Carstairs,	Perth,
Edinburgh,	Dundee West,
Glasgow (Central),	Do. East,
Do. (Bridge Street),	Forfar,
Do. (Buchanan St.),	Montrose,
Greenock,	Aberdeen,
Hamilton,	

to the carriage examiners at these stations.

In the event of a flexible pipe bursting on the journey, the guard will telegraph forward to the first carriage examining station to have a new pipe in readiness to replace the defective one, any irregularities or special circumstances in the working of the brake, or defects in its action, must also be specially reported by the guard in charge, to his district superintendent, as well as on his guard's journal, giving every particular mentioned in the printed forms supplied for that purpose.

Carriage examiners should see (1) that the brake connexions are perfect and properly adjusted for the wear of the blocks and wheels by being uniformly taken up. The pistons of double piston cylinders should each travel not less than two, nor more than four inches. Those of single piston cylinders should travel not less than four nor more than eight inches. (2) that the brake cylinders are perfect and lubricated at least every three months with *paraffin oil*, and (3) that the couplings and other parts are tight, and

must always have on hand, at a convenient place, one or more flexible pipes, with couplings fixed, ready to screw at once on to any vehicle that may require one.

THE STEEL-M'INNES SYSTEM.

Description.

Each locomotive is fitted with a small engine and pump for the purpose of compressing air into the main reservoir, which is carried below the foot-plate or other convenient place. The driver or any of the guards can apply the brake, *and it applies itself in the case of a break-away, or the failure of any of its vital parts.*

The compressed air is led from the main reservoir through a reducing valve adjusted to give the desired pressure it has been decided to work the brake, then to a check-valve and three-way-cock, all of which are placed convenient to the driver's hand on the foot-plate. The three-way-cock has a passage from the main reservoir to the main pipe on the train, and another from the main pipe to the atmosphere.

Each air-braked vehicle is fitted with a pipe with couplings at each end for connecting so as to form a continuous main pipe from the locomotive to rear braked vehicle; a cylinder with piston-rod connected to the brake levers; a small air reservoir; a small check-valve to prevent air that has passed from the main pipe to the lower end of cylinder and small reservoir from returning to the main pipe; and a small relief tap for the purpose of allowing the air to escape and take off the brake when necessary.

A gauge, placed on the locomotive and connected to the large reservoir, indicates the pressure of air on hand for charging the reservoirs and cylinders on the train.

When the handle of the three-way-cock is in a line with the locomotive, and the lever of check-valve pressed down, the passage from the large reservoir to main pipe is open, giving free access to both ends of cylinders and small reservoirs, all of which are charged equally with air up to the pressure at which the reducing valve is set, and on account of the greater area of the upper side of the pistons over that of the lower side, due to the large diameter of piston rods, the pistons are kept at the lower ends of cylinders, and *brakes are off.*

When the handle of the three-way-cock is at right angles to the locomotive or across the foot-plate the passage is closed from the large reservoir to the main pipe, and opened from the main pipe to the atmosphere, thus allowing the air in the *main pipe and upper ends of cylinder to escape*, and the air that is confined in the small reservoirs and lower ends of cylinders to expand and force up the pistons and rods and put *brakes on.*

Instructions.

Drivers.—The top or steam cylinder to be kept well lubricated with tallow, and the lower, or air cylinder, with a little pure mineral oil.

The pressure of air in main reservoir to be kept always in excess of the regulated pressure of reducing valve, and as much so as possible when about to connect to a train, and when additional carriages require to be attached.

Water to be run off main reservoir once a week, by the plug provided for the purpose.

In order to prevent waste of air from the main reservoir when brakes are put on by the guard, or by a failure of any of the pipes on the train, the check-valve on the locomotive must not be opened except when cylinders and reservoirs of carriages are being charged with air, or when taking off brakes.

The small hole for the passage of air through the check-valve being sufficient to maintain the pressure in main pipe when the train is running with brakes off.

For ordinary stoppages and slowing at junctions, &c., the three-way-cock must be so opened and closed

again that *no more air is allowed to escape from the main pipe than is necessary to apply the brakes lightly.*

When it is necessary to stop the train *quickly*, the three-way-cock must be opened at once to the fullest extent, and allowed to remain in that position until the train has come to a stand.

Drivers, before starting their trains, and during the journey, must make themselves thoroughly aware, personally, how many vehicles on their trains are fitted, or not fitted, with the continuous brake, and as to how many of the fitted carriages are connected with the engine, and they must be guided on the journey in the application of the brake accordingly.

Ordinary stoppages must not be made too quickly, particularly when there are vehicles in rear of the train not fitted or connected with the continuous brake, and in such cases it is the duty of the guard to apply the rear hand brake for ordinary stoppages, and also, on being warned by the driver by whistle, and when drivers have given the signal "brakes on" in cases where the train is not to be brought to a stand, care must be taken to give the whistle "brakes off" before altogether releasing the continuous brake or putting on steam.

Pilot engines assisting in front must be coupled to the train engine as closely as practicable, and the driver of the leading engine must not put on steam until the steam of the train engine is on, whether this may be in starting or for the purpose of increasing the speed after the steam has been shut off, neither must the tender brake of the leading engine be applied until the continuous brake is on, and when it is applied, it must not be released until the continuous brake is entirely off.

When approaching terminal stations, particularly on falling gradients, great care must be exercised to have the train so under control with the air brake that, if required, it could be stopped by the *tender hand brake only* before the engine reaches the station buffers. This must also be very carefully observed in the case of trains that arrive in docks, and behind other trains in through stations.

Guards.—Before starting with their trains, and during the journey, must make themselves thoroughly aware, personally, how many vehicles on their trains are fitted or not fitted with the continuous brake, and as to how many of the fitted carriages are connected with the engine, and they must be guided on the journey in the application of their hand brakes accordingly.

The guard in charge, before starting from a terminal station, or after making up or adding to a train, or after a fresh engine is attached, shall ascertain whether the brake is connected throughout the train by allowing a little air to escape from the valve in the rear van, reducing the pressure 5 or 10 lbs., after which the pressure indicator in the van should again rise to prove that the air pipes are open throughout from the engine. If the brake is not in use on the whole train, or if the van is not the last vehicle, the test should be made by loosening the flexible pipe and opening the cock in the brake pipe at the rear end of the last vehicle connected.

When a train has continuous braked carriages in front and carriages not fitted with continuous brakes in rear, guards must apply the hand brakes of such non-fitted vehicles, particularly the *rear hand brake*, at all ordinary stoppages, and must be prepared to apply them as efficiently as possible on being warned by the driver by whistle, and they must not be taken off until the driver gives the whistle "brakes off," or until all the vehicles of the train have *completely* come to a state of rest—including the rebound, if any, of the carriage buffers—and when the hand brake is being released it must not be allowed to fly off by suddenly withdrawing the catch, but must be taken off slowly.

In all cases of trains, whether fitted or not fitted with continuous brakes, arriving at terminal stations, and in docks, and behind other trains in through

stations, guards must apply their hand brakes as far as is necessary to assist in stopping at the proper place.

When the continuous brake requires to be applied from the van, which must only be done in cases of emergency, the tap in the brake vans must at once be turned wide open, and allowed to remain in that position until the train comes to a stand. In all cases of emergency this must be done in addition to the driver applying the brakes.

Hand brakes must, in all cases, be taken clear off before starting.

General.—It is the duty of the staff at stations where trains are made up, and where vehicles are attached or detached, to adjust the couplings and air pipes properly, and to be most particular in screwing all of the vehicles *tightly* together, and it is the duty of the fireman to attach the engine to the train before starting, and to detach it at the end of the journey. When the engine requires to be detached at any station for shunting purposes it is the duty of the station staff to do so, and to do *all* attaching and detaching of the engine, except in cases of the staff being limited or otherwise engaged, when the fireman must perform this duty at the request of the person in charge. It is the duty of the fireman, when the engine is brought back to the train preparatory to starting, to attach it properly to the train.

When the main pipe is fitted with a stop-cock at the ends of each vehicle the cocks are *open* when the handles are standing across or away from the pipe, and *shut* when the handles are up or alongside the pipe. *Upon no account* must any train be started from a station without *all* of these cocks being *open*, and when the train has to be separated for attaching or detaching, or taking off the engine, the stop-cocks where the separation is to take place *must be shut before* the flexible pipes are disconnected, and when the train is made up again the flexible pipes must be connected *before* the cocks are opened.

The free ends of the flexible pipe on the rear end of the last vehicle to be turned up and firmly fixed into its place by the screw provided, and the free ends of all pipes when not in use to be in the same way fixed in the places provided.

In *any case* of the brakes being applied and cannot be taken off by air from the locomotive in the ordinary way they can be taken off at once by *opening the relief tap* on each vehicle. And when at any time a train charged with air has to be run by a locomotive not fitted with continuous brake, or is cut off from the locomotive by intervening vehicles not fitted with brake pipes, the staff at stations, and guards at places where there is no station staff, must allow the air in the train to escape by *opening the relief tap* on each vehicle.

In cases where there may not be sufficient vehicles with the necessary fittings to compose the whole train it is desirable that those with the continuous brake be placed continuously next to the engine, so that the largest possible measure of brake power may be available.

To prevent the valve in the guard's brakes being tampered with, neither company's servants (unless duly authorised) nor passengers must be allowed to travel in the brakes, and those unoccupied must be locked up.

In the event of any irregularity, of whatever nature, occurring in the working of the brake, it must be reported at once, giving every particular mentioned in the printed forms supplied for that purpose.

Carriage Examiners.—To lubricate the cylinders on the carriages with a small quantity of mineral oil, about once a month to see that the brake connexions are in order, and *properly* adjusted for the wear of the blocks, and that the piston rods are kept clean.

GLASGOW AND SOUTH-WESTERN RAILWAY.

Notice.

WESTINGHOUSE CONTINUOUS BRAKE.

Description and Instructions for Working.

DESCRIPTION.

The air used to apply the brake is compressed by a small engine and pump placed on the locomotive. The driver or any of the guards can apply the brake, *and it applies itself in the case of a break-away, or the failure of any of its vital parts.*

The engine, tender, and each of the vehicles of the train is fitted with the following parts:—(1) a triple valve, (2) a supplementary air reservoir, and (3) a cylinder with piston rods; the latter in connection with (4) the brake lever and blocks.

When a train is made up and ready to start, and also when it is running, compressed air stands at about equal pressure throughout its length, that is to say, in the main reservoir, in the pipe from end to end of the train, in the triple valve and supplementary reservoir on each vehicle.

The brake is *applied* by a *decrease* of pressure in the main pipe. This causes the triple valves to move down, and to allow the air stored in the supplementary reservoirs to pass instantly into the cylinders, force out the pistons and rods, and cause the blocks to press against the tyres of the wheels.

The brake is *released* by an *increase* of pressure in the main pipe, by allowing air to pass from the main reservoir along the train. This moves the triple valves up, recharges the supplementary reservoirs, and at the same time allows the air which had forced out the pistons to escape into the atmosphere.

INSTRUCTIONS.

Drivers must see (1) that the top, or steam cylinder is kept well lubricated, (2) that the air cylinder is sparingly lubricated with a small quantity of refined petroleum,—other oils or tallow *must not be used in the air cylinder*,—(3) that the pump shall be *constantly run*, but never faster than is necessary to maintain the required air pressure,—and (4) *that air from 50 to 60 pounds pressure for stopping trains, and from 70 to 80 pounds pressure for express trains, is carried.*

For ordinary stops the brakes should be applied *lightly* by turning the handle of the driver's valve to the right, and *gently* closing it again, after a reduction of pressure in the brake pipe of not less than 5 lbs., nor more than 8 lbs. has been made. If the pressure runs up on the gauge when the handle is brought back, it shows that the valve has been shut too quickly.

In ordinary working the brakes are fully applied when the pressure shown on the gauge is reduced 25 lbs. Any further reduction is waste of air. In case of emergency, however, the handle must be turned so as to let all the air in the brake pipe escape.

Long trains require more careful handling than short trains, and a greater quantity of air must be discharged from the brake pipe to make the same reduction per square inch on the gauge.

In releasing the brakes the handle must be moved quite against the stop to the left and kept there for about *ten seconds*, and then moved back against the intermediate stop, which is the feed position, and *where it must remain whilst the train is running.*

Drivers must always satisfy themselves that the brake coupling on their engine is properly connected to that on the train, and that the *cocks in the brake pipe are open.*

Drivers, upon feeling that the brakes have been applied by the guard, or automatically, must at once aid in stopping the train by turning the handle of the brake-valve towards the right, thus preventing escape of air from the main reservoir.

The blocks of the driving wheel brake should be so adjusted by turning the screw that the pistons travel from 3 to 4 inches.

Drivers must be careful to drain the water out of the main reservoir once a week, especially in winter time.

If vehicles having different air pressures be coupled together, the brakes will apply themselves on those which have the highest pressure. To ensure the certain release of all the brakes in the train, and also that trains may be charged quickly, the driver must carry the maximum pressure in the main reservoir before connecting to a train; and then put the handle of his brake-valve in the release position until the train is charged with air. If the brakes on the engine and tender thus apply themselves by being coupled to a train not charged, they should at once be taken off by opening the release valves from the brake cylinders, which ought to be so arranged as to be worked from the foot-plate.

After connecting the engine to the train, or after new vehicles have been added, the pipes and reservoirs are to be charged as quickly as possible.

Guards.—Before leaving the terminus, after adding to or detaching from a train on the journey, or on another engine being attached, the rear guard shall ascertain whether the couplings are connected, and the cocks in the brake pipe are all open throughout the train, by applying the brakes from his van and seeing that they are released from the engine. If the brake is not in use on the whole train, or if the van is not the last vehicle, the test should be made by opening the cock in the brake pipe of the last vehicle connected.

Guards, when they have occasion to apply the brake from their van, must open the tap and allow the air to escape until the train is brought to a standstill, but they should only use the brake in cases of emergency.

Guards must, in all cases, screw the *hand brakes* clear off before starting,

General.—Before detaching the engine or any carriages the brakes must be fully released on the whole train. Neglecting this precaution, or setting the brakes by opening a valve or tap when the engine is away, may cause serious inconvenience in shunting. The pipes and joints must be kept tight, and when leaks are discovered they should be corrected, if serious, before the vehicle is again used.

The brake pipe has a tap at each end of every vehicle, all of which must be open when the couplings are united except the one at the rear of the train. *These taps must always be opened after connecting the hose couplings, and always closed before separating them.*

If the brakes are applied by the separation of the train, or the breaking of a pipe, they can be released by opening the small release valves in the brake cylinder or pipes leading thereto. If the brakes are applied after the engine has been disconnected, they can be released as above, or by again connecting to the engine.

The brake of any vehicle can be put out of operation, without affecting the others, by closing the tap under that vehicle between the brake pipe and triple valve.

Inspectors should see (1) that the brake connections are perfect and properly adjusted for the wear of the blocks and wheels by being *uniformly* taken up. The pistons of double-piston cylinders should each travel not less than 2 nor more than 4 inches. Those of single-piston cylinders should not travel less than 4 nor more than 8 inches. (2) That the brake cylinders are perfect, and lubricated at least every three months with *mineral oil*. (3) That the hose couplings are united, and the cocks in the pipes are open; that is, the handles must stand across or away from the pipe, except the one at the end of the train, which must lie along the pipe in the shut-off position. (4) That the joints are all air tight.

Note.—No. 3 refers to traffic platform inspector or foreman, who will also see that the hose coupling, when not used for connecting the brake between two vehicles, must be attached to the dummy coupling.

Drivers and guards must at all times arrange to control their trains in approaching terminal stations by the ordinary hand brakes upon the tenders and brake vans, so as not to require the use of the air brakes, unless as an emergency brake, at such places.

W. J. WAINWRIGHT,
General Manager.

Glasgow,
26th December 1881.

THE VACUUM AUTOMATIC BRAKE.

This brake can be applied throughout the train by the driver from his engine, or by the guard from his van.

Driver's Instructions.—Before starting see that your gauge indicates at least 18 inches of vacuum. This is done by admitting steam to the small ejector by means of a steam-cock placed for that purpose. To apply the brake, move the lever on the combination ejector to "On." In ordinary running this lever must stand at "Running position." To release the brake, move the lever to position "Off." *When the vacuum is suddenly destroyed in the main pipe the brake is full "On."* When separated from your train see that the couplings are placed upon the dummies fixed for that purpose.

Guard's Instructions.—To apply the brake, press down the lever on the valve placed in the guard's van. This admits air throughout the train pipe, and is to be only employed in cases of emergency. This valve opens automatically when the brake is applied with full force by the driver, and ensures rapid action. See that all pipes between carriages are properly coupled together, and that the couplings on the end coaches are placed upon the dummies. See by your gauge that a vacuum of 18 inches is maintained. Report otherwise to driver.

General Instructions.—To release the brakes for shunting purposes (the engine having left the train), first see that the hose coupling at one end of the train is off the dummy, then pull the cord which is fixed under the body of each carriage, as indicated by the arrows. This admits air to the top side of the cylinder, and the brakes come off by gravity.

GREAT NORTH OF SCOTLAND.

WESTINGHOUSE CONTINUOUS BRAKE.

Description and Instructions for Working.

DESCRIPTION.

The air used to apply the brake is compressed by a small engine and pump placed on the locomotive. The driver or any of the guards can apply the brake, and it applies itself in the case of a break-away, or the failure of any of its vital parts.

The engine, tender, and each of the vehicles of the train is fitted with the following parts: (1) a triple valve, (2) a supplementary air-reservoir, and (3) a cylinder with piston-rods, the latter in connexion with (4) the brake-lever and blocks.

When a train is made up and ready to start, and also when it is running, compressed air stands at equal pressure throughout its length, that is to say, in the main reservoir, in the pipe from end to end of the train, in the triple valve and supplementary reservoir on each vehicle.

The brake is applied by a decrease of pressure in the main pipe. This causes the triple valves to move down, and to allow the air stored in the supplementary reservoirs to pass instantly into the cylinders, force out the pistons and rods, and cause the blocks to press against the tyres of the wheels,

The brake is *released* by an *increase* of pressure in the main pipe, by allowing air to pass from the main reservoir along the train. This moves the triple valves up, recharges the supplementary reservoirs, and at the same time allows the air which had forced out the pistons to escape into the atmosphere.

INSTRUCTIONS.

Drivers must see (1) that the top or steam cylinder is kept well lubricated; (2) that the air cylinder is sparingly lubricated with a small quantity of refined petroleum—*tallow or oil must not be used in the air cylinder*; (3) that the pumps shall be *constantly run*, but never faster than is necessary to maintain the required air-pressure; and (4) *that air from 50 to 60 pounds pressure for stopping trains, and from 70 to 80 pounds pressure for express trains, is carried.*

For ordinary stops the brakes should be applied lightly, by opening the valve and closing it gently when the pressure has been reduced from 4 to 8 lbs. on the gauge.

The brakes are fully applied when the pressure shown on the gauge is reduced 25 lbs. Any further reduction would be waste of air.

In releasing the brakes the handle must be moved quite against the stop, and kept there for about 10 seconds, and then moved back against the intermediate stop, which is the feed position, and *where it must remain whilst the train is running.*

Drivers, upon feeling that the brakes have been applied by the guard or automatically, must at once aid in stopping the train by turning the handle of the brake-valve towards the right, thus preventing escape of air from the main reservoir.

The blocks of the driving-wheel brake should be so adjusted, by turning the screw, that the pistons move up from 3 to 4 inches.

Drivers must be careful to drain the water out of the main reservoir once a week, especially in winter time. If vehicles having different air-pressures be coupled together, the brakes will apply themselves on those which have the highest pressure. To ensure the certain release of all the brakes in the train and also that trains may be charged quickly, the driver must carry the maximum pressure in the main reservoir before connecting to a train, and then put the handle of his brake-valve in the release position until the train is charged with air. If the brakes on the engine and tender thus apply themselves by being coupled to a train not charged, they should at once be taken off by opening the release-valves from the brake cylinders, which ought to be *so arranged as to be worked from the foot plate.*

Guards.—Before leaving the terminus, after adding to a train on the journey, or on another engine being attached, the rear guard shall ascertain whether the couplings are connected and the cocks in the brake-pipe are all open throughout the train, by applying the brakes from his van and seeing that they are released from the engine. If the brake is not in use on the whole train, or if the van is not the last vehicle, the test must be made by opening the cock in the brake-pipe at the rear of the last vehicle connected.

The hose coupling, when not used for connecting the brake between two vehicles, must be attached to the dummy coupling. It is important to observe that the taps at the ends of the vehicles are open when the handles stand across or away from the line of pipes, and closed when parallel to or alongside the pipe.

Guards, when they have occasion to apply the brake from their van, must open the tap and allow the air to escape until the train is brought to a standstill, but they should only use the brake in cases of emergency.

Guards must in all cases screw the *hand brakes* clear off before starting.

General.—Before detaching the engine or any carriages, the brakes must be fully released on the whole train. Neglecting this precaution, or setting the brakes by opening a valve or tap when the engine is away, may cause serious inconvenience in shunting.

The pipes and joints must be kept tight, and when leaks are discovered they should be corrected, if serious, before the vehicle is again used.

If the brakes are applied by the separation of the train, or the breaking of a pipe, they can be released by opening the small release valves in the brake cylinder, or pipes leading thereto. If the brakes are applied after the engine has been disconnected, they can be released as above, or by again connecting to the engine.

The brakes of any vehicles can be put out of operation, without affecting the others, by closing the taps under those vehicles, between the brake-pipe and triple valve.

Inspectors should see (1) that the brake connexions are perfect, and properly adjusted for the wear of the blocks and wheels by being uniformly taken up. The pistons of double-piston cylinders should each travel not less than 2 nor more than 4 inches. Those of single-piston cylinders should travel not less than 4 nor more than 8 inches. (2) That the brake-cylinders are perfect, and lubricated at least every six months with *mineral oil*; and (3) that the couplings and other parts are tight.

SPECIAL NOTES.

When vehicles not fitted with a continuous brake, or having connecting-pipes only, are attached to a train fitted with such brake, or to an engine having the brake on the engine wheels as well as the tender wheels, the guard in the rear van must, immediately upon the continuous or engine brake being applied by the driver, apply his hand-brake, and keep it tightly on either until the train has come to a stand or the driver has taken off his brake and is again going forward, as the case may be. This arrangement is necessary to prevent the rebound of the carriages and possible breaking of the drawbars, which may occur when a powerful brake is applied to the front portion of the train only.

Drivers and guards must at all times arrange to control their trains in approaching terminal stations by the ordinary hand brakes upon the tenders and brake vans, so as not to require the use of the air brake unless as an emergency brake at such places.

NORTH BRITISH RAILWAY.

WESTINGHOUSE AUTOMATIC AND CONTINUOUS BRAKE.

DESCRIPTION.

1. Compressed air is the agent employed to apply the brake. The air is compressed by a small engine and pump placed on the locomotive. The driver or any of the guards can apply the brake, *and it applies itself in the case of a break-away, or the failure of any of its vital parts.*

2. The tender and each of the vehicles of the train are fitted with the following parts:—(1) a triple valve, (2) a supplementary air reservoir, and (3), a cylinder with piston rod; the latter in connection with (4) the brake lever and blocks.

3. When a train is made up and ready to start, and also when it is running, compressed air stands at equal pressure throughout its length, that is to say, in the main reservoir, in the pipe from end to end of the train, and in the triple valve and supplementary reservoir on each vehicle.

4. To apply the brake, air is allowed by the driver to escape, or, in an emergency, by any of the guards. This causes the triple valves to move down, the air stored in the supplementary reservoirs to pass instantly into the cylinders, the pistons and rods to be forced out, and the blocks to press against the tyres of the wheels.

5. To release the blocks from the wheels, air is allowed to pass from the main reservoir along the train. This moves the triple valves up, recharges the supplementary reservoirs, and at the same time allows the air which had forced out the pistons to escape into the atmosphere.

INSTRUCTIONS.

6. Drivers must see (1) that the steam cylinder is kept well lubricated, (2) that the air pump is sparingly lubricated with a small quantity of mineral oil,—tallow or lard oil must not be used in the air pump,—(3) that the pump is constantly run, but *never faster than is necessary to maintain the required air pressure*,—and (4) that air of about sixty pounds pressure is carried.

7. The brakes must not be used with more than half the full force, except in case of danger.

8. The brakes are fully set when the pressure shown on the gauge is reduced 25 lbs. Any further reduction would be waste of air.

9. To apply the brakes lightly, the tap must be partially opened and *gently* closed when the pressure has been reduced from 4 to 8 lbs.

10. In releasing the brakes the handle must be moved against the stop and kept there for about five seconds, and then moved back just far enough to stop the escape of air from the top of the tap.

11. Drivers, upon feeling the brakes are applied, must at once aid in stopping the train by turning the three-way cock and preventing escape of air from the main reservoir.

12. The blocks of the driving wheels must be so adjusted by turning the screw that the pistons only move up from 3 to 4 inches.

13. Drivers are hereby reminded of the following rule, as contained at page 130 of the book of rules and regulations, viz:—

Rule 267a. It is the duty of the engine-driver of a train provided with a continuous brake, before starting the train, and at places where the engines are changed, to ascertain from the head guard the number of vehicles there are on the train, and upon how many of them the brake can be applied, and when any vehicles are attached or detached on the journey, the engine-driver must ascertain whether the attaching or detaching of such vehicles will interfere with the working of the brake on the whole or a portion of the train, and if the latter, to what extent.

14. *Guards*.—On all trains provided with a continuous brake where there are more than one guard, the guard riding in the rear van for the time being will be held to be the head guard.

15. In order to prove whether the continuous brake is connected throughout, the guard in the rear van must, after the engine has been coupled on to the train, examine the pressure in the gauge, at the same time lifting the handle of the valve and ascertaining that air escapes. If the brake is not in use on every vehicle in the train, or, if the van is not the last vehicle, the test must be made by opening the cock in the brake pipe of the last vehicle connected, which must be one having the *brake apparatus complete*. (See clause 2.) These tests must be made on the following occasions:—(1) Before commencing the journey—invariably whether the train starts from a terminal or roadside station; (2) On the journey—invariably whenever vehicles are added to or taken off the train or any change is made in the engine or the engine is reversed.

16. Guards, when they have occasion to apply the continuous brake from a van, must hold the handle and allow the air to escape until the train is brought to a standstill, but must only use the brake in case of emergency.

17. When any vehicles not fitted with a continuous brake, or having connecting pipes only, are attached to a train fitted with such brake, the guard in the rear van must immediately, upon the continuous brake being applied by the driver, apply his hand brake,

and keep it tightly on, either until the train has come to a stand, or the driver has taken off the continuous brake, and is again going forward, as the case may be. This arrangement is necessary to prevent the rebound of the carriages, which may occur with trains composed of vehicles when only partially fitted with continuous brake.

18. Guards must, in all cases, screw the hand-brakes clear off before starting.

19. Guards are hereby reminded of the following rule as contained at pages 112 and 113 of the book of rules and regulations, viz:—

Rule 235a. The head guard of a train provided with a continuous brake must, before starting the train and at places where the engines are changed, inform the engine-driver the number of vehicles there are on the train and upon how many of them the brake can be applied; and when any vehicles are attached or detached on the journey, the engine-driver must be advised, and told whether the attaching or detaching of such vehicles will interfere with the working of the brake on the whole or a portion of the train, and if the latter, to what extent.

20. *General*.—Before detaching the engine, the brakes must be fully released on the whole train. Neglecting this precaution, or setting the brakes by opening a valve or tap when the engine is away, may cause serious inconvenience in shunting. The pipes and joints must be kept tight, and when leaks are discovered they must be corrected, if serious, before the vehicle is again used.

21. The brake pipe has a tap at each end of every vehicle, all of which taps should be open when the hose couplings are united, except the one at the rear of the train. These taps must always be opened *after* connecting the hose couplings and closed *before* separating them.

22. If the brakes are applied by the separation of the train, or the breaking of a pipe, they can be released by opening the small taps in the brake cylinder or pipes leading thereto. These taps, after the release of the brakes, must be closed. If the brakes are applied after the engine has been disconnected, they can be released as above, or by again connecting.

23. It is important to observe that the taps at the ends of the vehicles are open when the handles stand across, or away from the line of pipe, and closed when parallel to, or alongside, the pipe.

24. When the handle of the tap of the triple valve stands across, or away from the valve, it is set for the automatic brake. When against the stop at an angle of 45°, the brake is thrown out of use on the carriage.

25. Care must be taken (1) that the brake connections are perfect and properly adjusted for the wear of the blocks and wheels, (2) that the brake cylinders are perfect and lubricated occasionally with *mineral oil*, and (3) that the couplings and other parts are tight.

Application of Westinghouse Brake.

The attention of engine-drivers and firemen is specially called to the following Standard Instructions issued by the Westinghouse Brake Company:—

“Engine-drivers must exercise care and moderation in applying the brakes for ordinary stops, so as to bring their trains to rest without inconvenience to the passengers and to avoid damage to couplings.

“To ensure this, it is necessary that the brakes should be applied moderately in the first instance at a distance of several hundred yards from the station. *Just before coming to a stand the brakes should be released*, so as to avoid any jerk, and the *hand brake* on engine or tender must be applied to stop and hold the train.”

Engine-drivers and firemen are requested to carry out these instructions carefully; any failure to comply therewith will be seriously noticed.

BELFAST AND NORTHERN COUNTIES RAILWAY.

ARRANGEMENTS FOR WORKING VACUUM AUTOMATIC BRAKES.

All trains working with the automatic brake are to be controlled by drivers only. The guards are not to apply these brakes, except in cases of emergency.

When entering terminal stations these brakes will not be used; it will, therefore, be necessary for the drivers and guards to use the hand-brakes, as they have formerly been in the habit of doing.

Before starting, the vacuum gauges in engine and brake-van must indicate a vacuum of at least 15 inches, and this vacuum must be constantly maintained, excepting, of course, when air is admitted to apply the brakes.

On arrival at a terminal or other station where the vehicles are to be shunted or taken on by an engine not fitted with the automatic brake, it will be necessary to go to each vehicle in turn to leak the brakes off by pulling the wire placed under the frames for that purpose, before the vehicles can be moved.

The driver of a train provided with continuous brakes must be informed by the guard before starting, and at places where engines are changed, how many vehicles there are on the train, and upon how many of them the brake can be applied; and when any vehicles are attached on the journey the driver must be told whether the attaching of such vehicles will interfere with the working of the brake on the whole or any portion of the train, and if the latter, to what extent. The driver must see he gets this information.

When vehicles are supplied with connecting pipes only they must be considered as vehicles without brakes.

When vehicles not fitted with the continuous brake, or having connecting pipes only, are attached in rear of a train fitted with such brake, the guard in the rear van of such portion must, immediately upon the continuous brake being applied, apply his hand-brake, and keep it tightly on either until the train has come to a stand, or the driver has taken off the continuous brake, as the case may be. This arrangement is necessary to prevent the rebound of the carriages and possible breakage of drawbars, which may occur when a powerful brake is applied to the front portion of a train only. Vehicles fitted with connecting pipe only should, when possible, be placed between the engine and carriages, or as near the engine as possible.

It is the guard's duty before starting to see that all pipes between the vehicles are properly coupled together, and that the pipe at rear of last vehicle is placed on the iron plug fixed for that purpose to the train pipe.

Guards and drivers must report all irregularities in the working of trains fitted with the automatic vacuum brake.

Guards to note in journal, and drivers to note on mileage sheets trains worked with continuous brakes.

INSTRUCTIONS FOR WORKING THE SIMPLE VACUUM BRAKE.

1. All trains on which this brake is fitted will be controlled by the driver only, unless the guards are specially called upon to apply their brakes by the usual whistle signal.

2. In using this brake, the force to be applied must not exceed 15 inches on the vacuum gauge. The drivers must shut off steam and apply the brake, so that the stoppage can be properly effected with this power.

3. The excess of power beyond 15 inches of vacuum is not to be used, except in cases of emergency, such as an unusual stoppage or accident to train or engine.

4. Before starting with the train the driver is to test the connecting pipe, to see if it is properly coupled up,

by turning steam into the ejector. If it is all right the gauge will show it by the pointer remaining where carried by the vacuum.

5. The use of this brake is intended to control the speed on inclines, to give greater certainty in making stoppages, and to prevent the skidding of wheels. Drivers are cautioned against reckless running into a station and skidding the wheels to stop.

6. *In approaching a terminal station, the train is to be completely under control before the engine reaches the platform, so that a careful stop may be made, if necessary, by the hand brake of the engine only.*

7. Should an engine, fitted with this brake, have any defect in the ejector or pipes, the driver must, before starting with the train, give the guard notice that the hand brakes will require to be used, so as to avoid the necessity for calling on him to apply the brake on approaching each station.

8. The guard will be required, before starting with a train, to see that the engine is properly fitted, as, should an engine be on the train not provided with the ejector, the brakes will have to be used in the usual way, by hand.

9. When the pipe between the engine and train, or between the carriages, is disconnected, the couplings must be placed on the plug stops provided for the purpose.

10. The words "Vacuum Brake" to be written at the top of guard's journal for every train on which the vacuum brake is used. Guard is also to note on his journal particulars of every case of brake failing to act when required.

CAVAN, LEITRIM, AND ROSCOMMON LIGHT RAILWAY AND TRAMWAY.

INSTRUCTIONS FOR WORKING THE AUTOMATIC VACUUM BRAKE.

The brake can be applied throughout the train by the driver from the engine or by the guard from the van.

Creating Vacuum.—The engine having been coupled to the train and the hose coupling between the tender and train, also those between the vehicles connected and the one at the end of the train placed upon the plug, the driver admits steam to the small ejector which will soon exhaust the train pipe and cylinders, to a vacuum of 20 to 24 inches, or the large ejector may be used if the vacuum is required to be obtained more rapidly. The small ejector must be kept at work continuously to maintain the vacuum.

Before starting the driver must see that the gauge indicates at least 18 inches of vacuum, and that not less than this amount is maintained during the journey and while standing at stations. The vacuum is created by admitting steam to the small ejector, by means of the steam cock on combination ejector.

To apply the brake, move the handle on combination ejector in the direction marked "BRAKE ON."

To release the brake, move the handle on combination ejector in the direction marked "BRAKE OFF."

In ordinary running this handle must stand at "RUNNING POSITION."

When the guard has occasion to apply the brake, he must press down the handle on the valve placed in his van. This admits air throughout the train pipe, and is only to be employed in cases of emergency. The valve in the van opens automatically when the brake is applied suddenly by the driver, and ensures rapid action. The guard must see by the gauge in his van that a vacuum of at least 18 inches is maintained, or report otherwise to the driver. He must also see that all pipes between the carriages and engine are properly coupled together, and that the coupling on the last vehicle is placed upon the plug.

Whenever the pipes between the vehicles are disconnected the coupling must be placed upon the stop plug at the end of the vehicle.

To release the brake for shunting purposes (the engine having left the train), first see that hose coupling at one end of the train is off the plug, then pull the wire or cord fixed under the frame of each carriage. This admits air to the top side of the cylinder and the brakes fall off by gravity.

To couple the pipes the guard or porter must take one in each hand, and lift them sufficiently high to hook the bottom horns of the coupling together first, and then, by lowering them, place the top horns of the couplings in the slots.

To uncouple the pipes the guard or porter must simply lift them straight up, when the horns at the top will come out of the slots and the coupling will then separate.

The responsibility for properly coupling up all vehicles rests with the station staff and the guard; and the driver is responsible for his engine being properly coupled up by his fireman.

URBAN BROUGHTON,
Traffic Manager.

CORK AND MUSKERRY LIGHT RAILWAY.

TRAINS WITH PATENT CONTINUOUS BRAKE.

Vehicles (not being fitted with the apparatus) must be put at the rear of these trains, in order to preserve the continuity of the brake connexions in front.

Not more than four may be attached behind the guard's van, and proper couplings must, in all cases, be used, care being observed to have the usual tail lamp on the last vehicle.

INSTRUCTIONS TO ENGINE DRIVERS.

Application of the Brakes.

Before starting at the beginning of each journey the train must be examined to see what number of brake-fitted vehicles are connected, and the number that are in the rear of the train not fitted with brakes, or, if fitted, are not under the control of the driver.

Ordinary stoppages must not be made too quickly, and to avoid this the brake must be applied slightly some distance from where the train is to be stopped, and the application of it gradually and uniformly increased until the train comes to a stand, and must at all times be released very cautiously, to prevent the jerk consequent on the rebound of the carriage buffers and the engine shooting ahead, and to avoid subjecting the couplings to undue strain, and the passengers to discomfort.

This method of application to be carefully attended to when there are vehicles in rear of the train not fitted with brakes, and in such cases it is the duty of the guard to apply the rear brake.

When approaching terminal stations, particularly on falling gradients, great care must be exercised to have the train so under control that, if required, it could be stopped by the tender brake before the engine reaches the station buffer-stop.

Drivers must satisfy themselves that the brake is at all times in good working order. Before starting from a terminal station they must never fail to put on the brakes, and notice if the ejectors maintain a good vacuum both with the engine and carriage brakes. They must from time to time test its working.

The tender hand brake is not to be used for ordinary stoppages, but must be used occasionally when running light, in order to its being kept in a state of efficiency for emergencies, and always at terminal stations.

GREAT SOUTHERN AND WESTERN (IRELAND) RAILWAY.

INSTRUCTIONS FOR WORKING CONTINUOUS BRAKES.

A large number of carriages and engines are now fitted with the patent vacuum brake; and the attention of station masters, inspectors, guards, drivers,

firemen, porters, and others is called to the following instructions for working the brake:—

1. The brake is applied by the driver from the engine, and engine-men must test their brake when approaching stations at which they are appointed to stop, and must satisfy themselves it is in working order, and be prepared to bring their train to a stand by the use of the hand brakes, should necessity require it. Guards must keep a good look-out, and be ready to apply their brakes at any moment, for which they will be held responsible.

2. Station masters, inspectors, and foremen must give special attention to the proper coupling of the air brake pipes, and make such arrangements as will insure these pipes being cared for and not improperly used; and experienced men must be selected to couple together the pipes of the vehicles fitted with the vacuum brake, and instructed that the springs on the right-hand couplings are to be carefully put through the notches on the left-hand couplings, and then twisted round at right angles to the notches.

3. The guards must see that the pipes of the air brakes on their trains are properly coupled together before starting, and whenever any engine or vehicle is attached or detached; and they must, as far as possible, whenever the train stops at a station, examine the pipes and see that they are in good order.

4. Carriage examiners at terminal stations must ascertain from the driver, as soon as he has coupled up to his train and tried his brake, whether the pipes are air-tight; and examiners at Portarlington, Limerick Junction, and Mallow must ascertain at once on arrival, from the drivers of trains fitted with vacuum brakes, whether any leakage has been found in the train pipes; and if so, must ascertain where it is, disconnecting the pipes of the faulty vehicle if necessary. If any defect is found, it must be immediately reported to their inspector.

5. Vehicles which are fitted with the continuous brake must only be used on continuous brake trains, or as through carriages in branch trains in connection with continuous brake trains. Any spare vehicles which are fitted with the continuous brake must be worked up to Kingsbridge.

6. When vehicles fitted with this brake are left in sidings or at stations, the brake pipes of each vehicle must be coupled together, and not left hanging loose. Porters and others are cautioned that *they must not stop upon the brake pipes.*

7. Guards must enter on their journals full particulars of any defect, failure, or unsatisfactory working of the brake of their train, or any portion of the fittings, couplings, &c.

8. Terminal stations must be approached cautiously; and all trains working from Inchicore to Kingsbridge, and from Kilbarry to Cork, must be taken down the inclines with hand-brakes.

9. Ordinary stoppages must not be made too quickly, and to avoid this the brake must be applied slightly, some distance from where the train is to be stopped, and the application of it should be gradual and uniform.

10. Where a train is formed of continuous-braked vehicles in front, and hand-braked vehicles behind, the rear guard must put on his brake; and in order to prevent the rebound of carriage-buffers, his brake must be kept on till the train is again about to start.

11. Hand brakes alone to be used when stopping trains coming into terminal stations with blind ends (such as Queenstown, Youghal, or Cork, Summerhill,) the continuous brake being reserved for cases of necessity.

12. When using the continuous brake for stopping in the ordinary way at stations, drivers are not to use more than five inches of vacuum, and when coming to a stand they are not to put the brake on harder, but to slightly release it by opening the valve a little.

MIDLAND GREAT WESTERN RAILWAY.

RULES TO BE OBSERVED IN WORKING POWER
BRAKES.

INSTRUCTIONS TO ENGINEMEN.

*Continuous (Vacuum) Brakes applied to Passenger
Engines and Carriages.*

Before starting on the journey, when the engine is attached to the train, the driver must examine his train to see that all brake-fitted vehicles are connected, and he is to note the number (if any) in rear of the guard's van not so fitted, or, if fitted, which are not connected, so that he may know the amount of brake-power at his command.

At each intermediate station, where vehicles are taken on, or left off, it must be ascertained from the guard (whose duty it is to walk forward to the engine and give the information) to what extent the brake-power is affected by the altered composition of the train.

Ordinary stoppages must not be made too quickly, therefore the brake must be applied slightly some distance from where the train is to be stopped, and the application of it gradually and uniformly increased, until the train comes to a stand, and it must at all times be released very cautiously, to prevent the jerk consequent on the rebound of the carriage buffers and the engine shooting ahead, and to avoid subjecting the couplings to undue strain and the passengers to discomfort.

Especial care to be observed when there are vehicles in rear not fitted with brakes.

When approaching terminal stations, particularly on falling gradients, great care must be exercised, so that the stopping of the train may be under the driver's complete control. *All trains are to be stopped at every terminal and junction station by hand-brakes only*, except in case of failure of the hand-brakes, or in the event of some sudden danger arising that calls for the instant pulling up of the train, then the power-brake is to be used.

Drivers must satisfy themselves that the brake is at all times in working order. Before starting from a terminal station they are to put on the brakes and notice if the ejectors maintain a good vacuum both with the engine and carriage brakes. They must from time to time test its working.

Each engine and guard's van will be fitted with a "tell-tale" vacuum gauge. When the vehicles are all coupled together and attached to the engine and a vacuum maintained in the pipes, then the gauge will show the word "right." When the engine is detached, or any of the vehicles separated, the dial will show the word "wrong," which means that the brake is not in working order. This may result from the connecting air-pipes between the carriages not having been coupled up, through some accident to the pipes, or to the vacuum cylinders, or from part of the train becoming detached.

Whatever the cause, when the dial shows "wrong," it is to be understood the vacuum-brake is defective, and no longer to be relied on, and recourse must then be had to the hand-brakes, and prompt steps taken to remedy any accident or make good any defect that may have taken place.

In addition to the tender hand-brake being *always* used when coming into a terminal station it must be used occasionally when running light, to insure its being kept in good working order.

It is the duty of the fireman to couple the air-pipe of the engine to the air-pipe of the train before starting, and to detach it at the end of the journey; and if the pipes between the tender and the next vehicle to it have been uncoupled at intermediate stations for shunting or other purposes, the fireman must see that they are properly coupled before the train starts, and the driver is to see that the fireman properly carries out this work.

INSTRUCTIONS TO GUARDS.

The head guard must examine the train to see the number of brake-connected vehicles, and to give the necessary information, mentioned above, to the driver; and when there are vehicles over which the driver has no brake-control, the guards must give the necessary attention to the hand-brake. The working of the continuous brakes by the driver will not relieve the guards from any responsibility; they must keep a good look-out, and be prepared to apply the hand-brakes whenever any necessity arises. At terminal stations guards must apply their hand-brakes should they think the driver has not his train well in hand, or that there is the least risk of touching the buffer-stops.

The guards of the train must examine the couplings at each station where the stopping time will admit of it, and satisfy themselves, before ordering the train to start, that the pipes are firmly and properly coupled, and that the couplings and pipes are in thoroughly good order.

Guards must enter on their journals full particulars of any defect, failure, or unsatisfactory working of the brakes of their train, or any portion of the fittings, couplings, &c. They must also enter upon their journals any sudden stop made by the application of the power-brake, and state the circumstances.

Guards are required to read, and to make themselves thoroughly conversant with, the *Instructions to Drivers* on the working of continuous brakes; and their special attention is called to the Rule for the application of hand-brakes with mixed and goods trains, and to the use of hand-brakes when coming into all terminal stations.

GENERAL INSTRUCTIONS.

Station-masters, inspectors, and foremen must give special attention to the proper coupling of the air-brake-pipes by experienced porters, and must carefully examine the couplings before starting the train. They must make such arrangements as will insure these pipes being cared for, and in no way improperly used.

All the vehicles composing the train are to be coupled tightly together to prevent excessive action of the buffers of the carriages when the brake is applied, and to insure that the air-pipes will not be disconnected by any strain that may be put upon the drawbars.

It is the duty of the staff at stations to adjust the couplings and air-pipes of the carriages properly, and it is the duty of the fireman to attach his engine to the train before starting, and to see to the brake-couplings between the engine and the train. The driver, at stations where trains are first started from, and the head guard at intermediate stations, where vehicles are taken on or left off, are responsible for seeing that the couplings and air-pipes of the carriages composing the train are properly adjusted.

Care must be taken when, from any cause, vehicles fitted with the air-brake are detached from the train, and the pipes disconnected, that the pipes are again coupled; and when, in like manner, vehicles are attached to the train, the pipes must be properly coupled, so as to form continuous communication throughout the train, the pipe on the last brake-fitted vehicle being coupled to its "dummy."

When vehicles fitted with a continuous air-brake are left in sidings or at stations, the brake-pipes of each vehicle must be coupled to the "dummy" (fixed to each pipe) and not left hanging loose.

Porters and others are cautioned that, in passing between vehicles, *they must not step upon the brake-pipes*, or in any way interfere with the connexions.

Carriage trucks must always be put at the rear of trains.

WATERFORD AND LIMERICK RAILWAY.

INSTRUCTIONS FOR WORKING CONTINUOUS AUTOMATIC VACUUM BRAKE.

1. In the formation of trains, when the whole of the coaches are not fitted with the automatic vacuum brake, those that are so fitted must be placed together, and next to the engine. When the whole train is not fitted, the automatic vacuum brake must not be used for ordinary stoppages, but only in cases of emergency. In all cases where the automatic vacuum brake is only partially fitted to a train, a brake van, or a carriage, with a guard in it, must be the last passenger vehicle in the train, and this guard must apply his hand brake in running into all stations where the train is to be stopped.

2. The brake can be applied throughout the whole of the vehicles fitted with the apparatus by the engine-man from the engine, or by the guard from his van; but in order that this may be done, it is imperative that the flexible connexions between each carriage and between the engine and the train shall be properly coupled up.

3. Guards must never apply the automatic vacuum brake except in cases of absolute necessity, and whenever they do so a full report of the circumstances must be made on their journals; they must at all times be read to apply the *hand brake* should the engine-man call by whistle for its assistance.

4. When the automatic vacuum brake is to be used for the ordinary stoppage of trains, it must be by the engine-man opening the air valve on the engine, but it must be done gradually, and never suddenly or with full force, except in cases of emergency.

5. *In approaching junctions, terminal stations, or stations at which other trains may be standing on the same line of rails, or crossing stations on single lines, the automatic vacuum brake or steam brake must only be used in cases of emergency, the engine-men taking care to reduce the speed of the train so that the train may be brought to a stand by the hand brakes alone.*

6. In the event of a train parting, the guard in the rear portion must at once apply his hand brake, and keep it tightly screwed on until the train is again coupled to the engine.

7. In descending inclines the engine-man must, when necessary to reduce the speed, use the automatic vacuum brake in preference to the hand brakes.

8. The head guard, before giving the signal to start at the commencement of the journey, and at stations where any of the flexible pipes have been coupled or uncoupled, must ascertain and inform the engine-man—

1st. That all vehicles throughout the train fitted with the brakes have the flexible pipes properly coupled up.

2nd. That the flexible pipe at the rear of the last brake vehicle is properly placed upon the stop plug.

3rd. That 15 inches of vacuum is indicated by the gauge in the rear van on the train; and,

In the event of there being any vehicles on the train not fitted with the vacuum brake, the head guard must inform the engine-man of the fact before starting, so that the engine-man may know what number of vehicles he has control over, and what number are without the vacuum brake.

9. The engine-man, before starting at the commencement of the journey, and also at stations where any of the flexible pipes have been coupled or uncoupled, must ascertain from the guard the number of vehicles in the train fitted with the brake the flexible pipes of which are coupled up to the engine, and that a vacuum of at least 15 inches is shown by the gauge in the rear van. He must also be careful to see—

That the vacuum pipe of his engine is properly coupled up to the leading vehicle in the train.

That at least 15 inches of vacuum is indicated by the gauge on the engine.

10. If from any cause the engine-man is unable to obtain at least 15 inches of vacuum, he must inform the guard of the fact, and they must work the train forward with the ordinary hand brakes.

11. Just before coming to a stand, after the application of the automatic vacuum brake at stations, or when stopped on the road, the engine-man must use his ejector so as to partially release the continuous brake. This will prevent any rebound of the carriages, and will also enable the engine-man to start his train immediately on receipt of the signal to do so.

12. When the pipes between the engine and train are disconnected, the couplings must be placed on the plug stops provided for the purpose. Detached carriages must always have the hose couplings placed on the plug stops.

13. At any station where there is any likelihood of vehicles being put on or taken off, the vacuum in the continuous pipe must be destroyed by opening the air valve on the engine, so that there may be no delay in coupling or uncoupling.

14. As india-rubber is dissolved by oil or grease, it is most important that nothing of a greasy nature should be applied to or allowed to reach the piston or piston rod. The only lubrication which is required is a little pure blacklead, which must be placed inside each cylinder by the persons appointed for the purpose. The other part of the brake must be cleaned and oiled by the examiners in the usual way.

15. In the case of vehicles fitted with the combined hand and vacuum brake, the guard must see before starting that the hand brake is screwed "full off," and the handle secured by means of the chain provided for that purpose.

16. It is necessary that the words "continuous brake train" shall be written at the top of the engine-man's train bill and guard's report for every train fitted with the automatic vacuum brake. It is also necessary for the engine-man to show on his mileage ticket the trains which have been worked by him with a continuous brake during the week.

17. If from any cause the automatic vacuum brake is not used, or fails to act when required, or if there is any irregularity in its working, a remark to that effect must be made by the guard on his report, and by the engine-man on his train bill, which must be accompanied by a special report giving full particulars of the irregularity.

18. Guards must take care during the journey that nothing in the van is allowed to rest against or in any way interfere with the lever of the brake setter.

19. When vehicles are supplied with connecting pipes only, they must be considered as vehicles without the brake, but the brake connexions must be made as described in clause 2.

20. When vehicles not fitted with a continuous brake, or having connecting pipes only, are attached to a train fitted with such brake, or to an engine having the brake on the engine wheels as well as the tender wheels, the guard in the rear van must, immediately upon the continuous or engine brake being applied by the driver, apply his hand brake, and keep it tightly on, either until the train has come to a stand, or the driver has taken off his brake, and is again going forward, as the case may be. This arrangement is necessary to prevent the rebound of the carriages and possible breaking of the drawbars which may occur when a powerful brake is applied to the front portion of trains only.

JOHN ROBERTS,
Traffic Manager.

JOHN G. ROBINSON,
Locomotive and Carriage Superintendent.

July, 1889.

3.—CIRCULAR of BOARD OF TRADE to RAILWAY COMPANIES.

Board of Trade, Railway Department,
30th August 1877.

SIR,
I AM directed by the Board of Trade to request that you will call the attention of the Directors of your Company to the paper which has recently been laid before Parliament, containing the correspondence that has taken place between the Board of Trade and the Railway Association relative to the use of continuous brakes, and to state that this Department have been giving further careful consideration to this important question, as will be seen by a reference to the General Report upon Railway Accidents for the year 1876 recently presented to Parliament.

In that Report will be found the details of the circumstances attending all the accidents which have been investigated by the officers of the Board of Trade during the past year; from a careful examination of which and similar information for the past few years, the Board of Trade are led to conclude that three fourths of those accidents might probably have been avoided, or the results materially mitigated, if the passenger trains concerned had been provided with continuous brakes.

In Mr. Leeman's letter of the 18th April, forming part of the correspondence above referred to, it is stated that it is "not essential that one form of brake should be invariably adopted." If by this it is meant that it is desirable to try every form of brake, and that it is not desirable by the exclusive adoption of one form to prevent the trial and introduction of better forms, the Board of Trade would entirely concur. But if it is meant that there would be no advantage in having one form of brake for all lines which interchange traffic with one another, the Board of Trade hold a different opinion; for it appears to them obvious that in the interchange of rolling stock, including ordinary carriages, saloon and family carriages, horse boxes, carriage and fish trucks, and other vehicles forming part of passenger trains, between one line and another, if the brake fittings are not similar, the efficiency of the brakes must be proportionately impaired and that this must be especially the case where the lines of two or more companies are continuous.

The London and North-western, the Great Northern, and the Midland Companies all run through-trains to Scotland, which are forwarded over the Caledonian, North-eastern, North British, Glasgow and South-western, and Highland Railways. It is therefore obvious that the advantage to be derived from any continuous brake system in use on any of these lines will be diminished and neutralized if at such stations as Carlisle, Glasgow, York, Edinburgh, Perth, and Inverness the traffic is so arranged that carriages with one system of brakes are attached to trains containing carriages fitted with a different system. This evil can only be avoided if those companies which interchange traffic with one another adopt one and the same general system.

The Board of Trade therefore regret to observe from the returns forwarded, in the correspondence above alluded to not only that there is no immediate prospect of the adoption of any such general system even by companies owning continuous lines, but that many of the companies are not taking, and apparently refuse to take, any steps towards that end.

Referring to the merits of the different brakes now in use, or under experiment, as stated in the answers to the questions put by the Board of Trade, it is to be remarked that the statements of the different companies vary considerably, and are scarcely consistent with each other.

Thus the London and North-western Company express themselves satisfied with a mechanical continuous brake, which is reserved for cases of emergency,

and which can only be applied throughout the train by the engine-drivers or guards through the intervention of a communication-cord.

No other great company appears to have even tried this brake. On the other hand, many companies speak in the highest terms of air or vacuum brakes, which are rejected in toto by the London and North-western Company. The Great Northern Company have adopted a vacuum brake, which is highly thought of, and which it is stated can be made self-acting, but which, so far as can be learned from the correspondence, does not at present possess that quality. The Midland, North-eastern, North British, and some other companies are stated to have tried or adopted brakes which are self-acting. On the other hand, the Manchester, Sheffield, and Lincolnshire Company seem to think that new elements of danger are produced by the practical operation of continuous brakes, though they do not say what those dangers are. It would be easy, but is scarcely necessary, to dwell at greater length on the different and even discordant views disclosed in the answers of the different companies.

Under these circumstances the Board of Trade, whilst recognizing the efforts which some of the companies are making in testing or adopting improved systems of brakes, cannot regard the state of things shown by these papers as satisfactory, inasmuch as it indicates a diversity of opinion and action and in some cases an absence of progress, which, if allowed to continue, will be most injurious to the character of the companies and to the interests of the public. There has apparently been no attempt on the part of the various companies to take the first step of agreeing upon what are the requirements which in their opinion are essential to a good continuous brake.

In the opinion of the Board of Trade these conditions should be as follows:—

- a. The brakes to be efficient in stopping trains, instantaneous in their action, and capable of being applied without difficulty by engine-drivers or guards.
- b. In case of accident to be instantaneously self-acting.
- c. The brakes to be put on and taken off (with facility) on the engine and every vehicle of a train.
- d. The brakes to be regularly used in daily working.
- e. The materials employed to be of a durable character, so as to be easily maintained and kept in order.

The inquiries and experiments instituted by the Royal Commission on Railway Accidents, and the recent researches into the causes of railway accidents during the last few years, appear to the Board of Trade to leave no doubt as to the importance of the above conditions, and the experience which has been obtained by the companies appears sufficient to enable them to come to some general and unanimous conclusion.

There can, therefore, be no reason for further delay, and the Board of Trade feel it their duty again to urge upon the railway companies the necessity for arriving at an immediate decision and united action in the matter.

The companies and their officers, who are as much interested as the public in the safe and efficient working of their railways, and upon whom devolves the adoption of proper systems of brake and of such other improvements as have been proved by past experience to be necessary in the interest of public safety, would do well to reflect that if a doubt should arise that from a conflict of interest or opinion, or from any other cause, they are not exerting themselves, it is

obvious that they will call down upon themselves an interference which the Board of Trade, no less than the companies, desire to avoid.

In conclusion I am to call your attention to a notice which has already been given in Parliament for next session, for copies of any further correspondence between the Board of Trade and the Railway Companies with reference to the progress made in brake power; and in order that the Board of Trade may be in a position to furnish that information to Parliament, I am to

request that the companies will from time to time furnish the Board with full accounts of any further experiments they may make, and of any steps which they may take for the adoption or extension of improved systems of brakes.

I am, &c.

The Secretary,

EDWARD STANHOPE.

Railway Company.

4.—COPY OF ACT.

(41 Vict. Chapter 20.)

A.D. 1878. An Act to provide for returns respecting Continuous Brakes in use on Passenger Trains on Railways. [17th June 1878.]

BE it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows :

Short title, 1. This Act may be cited as the Railway Returns (Continuous Brakes) Act, 1878.

Returns to be made twice a year by railway companies to Board of Trade respecting continuous brakes. 2. Every railway company shall twice in every year make to the Board of Trade returns respecting the use of continuous brakes on the passenger trains running on the railways worked by such company.

The returns shall contain the particulars and be in the form specified in the schedule to this Act, or shall contain such other particulars and be in such other form as the Board of Trade from time to time prescribe; and the Board of Trade may in any case dispense with any part of the returns where they deem the same inapplicable.

The returns shall be made for the six months ending on the last day of December and the last day of June in every year, or on such other days as the Board of Trade from time to time direct, and shall be made within fourteen days after the expiration of each six months.

Every return shall be signed by the officer of the company responsible for the correctness of the return, and by the chairman or deputy chairman of the directors of the company, or where there are no directors by the individual or one of the individuals bound to make the return.

Any railway company who fail to comply with this section shall be liable on summary conviction before a court of summary jurisdiction to a fine not exceeding five pounds for every day during which the default continues.

Any person who makes or is privy to the making of a return under this Act which is to his knowledge false in any particular shall be liable on summary conviction before a court of summary jurisdiction to a fine not exceeding fifty pounds.

34 & 35 Vict. c. 78. Expressions in this Act have the same meaning as they have in the Regulation of Railways Act, 1871.

SCHEDULE.

FORMS OF RETURN (AS AMENDED BY BOARD OF TRADE).

RETURN for the Six Months ending on the _____ day of _____ 18 of the Amount and Description of Continuous Brake Power in use on the Passenger Trains running on the railways worked by the _____ Railway Company.

Name of Railway Company.	Name and Description of Brakes adopted by the Company and in use on Passenger Trains on Lines worked by them.	(1.) Whether the brakes are instantaneous in action and capable of being applied by engine-driver and guards.	(2.) Whether self-acting.	(3.) Whether capable of being applied to every vehicle of a train.	(4.) Whether in regular use in daily working.	(5.) Whether the materials employed are of a durable character, easily maintained and kept in order.	Amount of Stock fitted with Continuous Brakes.				Amount of Stock fitted during the above Six Months.				Special Rules under which the Continuous Brakes are worked.		
							NUMBER OF VEHICLES.				Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brakes.	Number of Engines and Tenders (used for Passenger Trains) in which the Brakes can be applied to the Wheels.	Number of Passenger Carriages and other Vehicles used for Passenger Train.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brakes.		Number of Passenger Carriages and other Vehicles used for Passenger Trains.	
							Passenger Carriages.	Other Vehicles used for Passenger Trains.	Fitted only with Chains or Pipes and Connections for connecting the Brake.	Fitted only with Chains or Pipes and Connections for connecting the Brake.						Fitted only with Chains or Pipes and Connections for connecting the Brake.	Fitted only with Chains or Pipes and Connections for connecting the Brake.
(Each description of Continuous Brakes to be given.)		(Repites to these questions to be given for each description of Brake, and also state whether the Brakes are used for every stoppage.)															
(The amount of stock fitted with each description of Brake to be given.)																	

No. 2.—RETURN for the Six Months ending on the _____ day of _____ 18 of all instances in which Continuous Brakes have failed to act when required to be brought into action, or have caused delay in the working of the trains on any railway worked by the _____ Railway Company.

No. 3.—RETURN for the Six Months ending on the _____ day of _____ 18 of the Number of Miles run by Passenger Trains not fitted with Continuous Brakes on any railway worked by the _____ Railway Company.

1. Name of Railway Company.	2. Name or description of Brake which failed or caused delay in any of the instances asked for in Column 4.	3. Date of Failure.	4. Instances under the three following heads separately of:— 1. Failure or partial failure, to act when required in case of an accident to a train, or a collision between trains being imminent. 2. Failure or partial failure to act under ordinary circumstances to stop a train when required. 3. Delay in the working of trains in consequence of defects in, or improper action of, the brakes, distinguishing whether they arose from neglect or inexperience of servants or failure of machinery or material.	5. Number of Miles run by Trains fitted with each description of Continuous Brake.	Name of Railway Company.	Name of Railway worked by Company on which Continuous Brake.	Number of Miles run by Passenger Trains without Continuous Brakes.

LONDON: Printed by EYRE and SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty.
For Her Majesty's Stationery Office.

RETURN

(In pursuance of the RAILWAY RETURNS (CONTINUOUS BRAKES) ACT, 1878)

BY

THE RAILWAY COMPANIES OF THE UNITED KINGDOM,

For the Six Months ending the 30th June 1890.

Presented to both Houses of Parliament by Command of Her Majesty.



LONDON:
PRINTED FOR HER MAJESTY'S STATIONERY OFFICE,
BY EYRE AND SPOTTISWOODE,
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1890.

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Board of Trade,
August 1890.

HENRY G. CALCRAFT.

ABSTRACT of the RETURNS showing the description of CONTINUOUS BRAKES in use on 30th June 1890 on the Railways in the UNITED KINGDOM, and the AMOUNT of STOCK the MILEAGE run by Trains fitted with each description of Brake, &c., &c.

Name of Brake.	Name of Railway Company.	Stock fitted.				Number of Miles run by Trains fitted.	Proportion per cent.		
		Engines and Tenders.		Carriages, &c.			Of Vehicles fitted with Brakes.	Of Mileage run by Trains fitted.	
		Fitted with Brakes.	Fitted with Apparatus for working the Brakes.	Fitted with Brakes.	Fitted with Pipes, &c.				
1. The following Brakes are returned by the Companies as complying with the conditions specified in the Circular of the Board of Trade, dated 30th August 1877. (For copy of Circular see page 122.)									
Automatic Vacuum -	Aylesbury and Buckingham	—	—	—	—	11,160	—	100	
	Barry Dock and Railways -	3	—	37	—	23,353	100	100	
	Cheshire Lines - - -	—	—	321	52	845,752	80	100	
	Furness - - - -	24	4	101	71	211,448	31	60	
	Great Northern - - -	514	15	2,278	713	4,457,328	79	100	
	Great Western - - -	—	1,565	4,354	615	7,818,200	85	95	
	Hull, Barnsley, and West Riding Junction.	12	—	—	90	1,488	—	1	
	Lancashire and Yorkshire -	690	—	3,246	—	4,673,680	98	100	
	London and North-western -	—	1,162	3,873	—	5,823,654	57	59	
	London and North-western and Caledonian (West Coast Joint Stock).	—	—	302	—				
	London and South-western -	492	14	2,499	591	4,468,436	81	100	
	London, Chatham, and Dover	2	—	12	3	24,074	1	1	
	Manchester, Sheffield, and Lincolnshire.	334	8	826	226	1,669,110	79	100	
	Manchester South Junction and Altrincham.	2	—	14	—	3,908	12	3	
	Mersey - - - -	6	9	79	3	108,297	96	100	
	Midland - - - -	—	967	3,984	26	6,539,807	89·5	96	
	Midland & South-western Jn.	—	3	9	15	—	22	—	
	North-eastern - - -	—	5	—	—	3,251	—	—	
	North Staffordshire - -	8	—	40	—	133,800	11	22	
	Rhondda and Swansea Bay -	6	—	31	—	13,456	100	100	
	Seacombe, Hoyle, & Deeside	7	—	24	6	75,279	56	100	
	Somerset Joint Committee -	—	37	148	—	245,148	100	100	
	South-eastern - - - -	178	—	602	—	—	28	—	
	Taff Vale - - - -	33	—	212	7	172,762	97	99	
	Glasgow and South-western	51	—	487	—	839,594	47	57	
	Highland - - - -	57	—	116	527	251,386	15	54	
	Belfast & Northern Counties	37	—	147	64	273,888	63	70	
	Cavan, Leitrim, and Roscommon Light.	8	—	123	5	46,813	96	100	
	Cork, Bandon, and South Coast.	2	—	6	—	—	—	—	
	Cork and Muskerry Light -	4	4	17	—	35,328	35	100	
	Dundalk, Newry, & Greenore	—	—	8	3	—	32	—	
	Great Northern of Ireland -	6	—	60	107	—	12	—	
	Great Southern and Western	1	—	6	—	16,729½	1	1	
	Midland Great Western -	38	—	109	113	76,672	32	12	
	Waterford and Limerick -	9	—	10	16	23,282	7	6	
	West Clare - - - -	4	—	66	—	26,178	100	100	
	Steel McInnes - Westinghouse Auto- matic.	Caledonian - - - -	—	—	29	5	48,224	1	1
		Colne Valley and Halstead -	3	—	5	7	14,000	20	39
		East and West Junction -	3	—	11	2	50,414	61	82
		Eastern and Midlands - -	18	—	57	86	134,480	34	76
		Great Eastern - - - -	447	2	3,405	12	4,980,944	100	99
		Hull, Barnsley, and West Riding Junction.	21	—	85	106	175,059	44·5	99
London, Brighton, & S. Coast		356	—	2,675	181	3,502,073	93	100	
London, Chatham, and Dover		108	—	762	2	999,986	72·5	59	
Londonderry - - - -		3	—	18	—	19,824	100	100	
London, Tilbury, & Southend		30	—	245	6	353,135	91	100	
Midland - - - -		46	—	117	233	7,764	4·5	—	
Midland, Scotch Joint Stock		—	—	85	—				
North-eastern - - - -		571	5	2,977	8	5,151,563¼	100	100	
North Staffordshire - -		—	—	—	4	—	—	—	
Rhymney - - - -		10	8	56	22	85,024	72	100	
West Lancashire - - -		9	—	25	6	113,198	28	97	
Ayrshire & Wigtownshire -		4	—	6	12	23,598	50	50	
Caledonian - - - -		286	22	1,295	727	2,993,357	63	97	
Glasgow and South-western		94	—	370	139	579,362	36	40	
Great North of Scotland -		49	—	200	235	276,049¾	38	45	
North British - - - -		163	52	1,660	476	2,924,754	72	88	
Castlederg and Victoria Bridge		2	—	7	20	8,608	26	100	
Totals - - -		4,749	3 882	38,237	5,456	61,354,678	71	77	

Name of Brake.	Name of Railway Company.	Stock fitted.				Number of Miles run by Trains fitted.	Proportion per cent.	
		Engines and Tenders.		Carriages, &c.			Of Vehicles fitted with Brakes.	Of Mileage run by Trains fitted.
		Fitted with Brakes.	Fitted with Apparatus for working the Brakes.	Fitted with Brakes.	Fitted with Pipes, &c.			
2. The following Brakes appear to comply with only some of the conditions specified in the Circular above mentioned.								
Clark's Chain	Isle of Wight Central	1	—	7	—	28,751	18	32
	North London	—	—	2	—	—	—	See below
	Severn and Wye and Severn Bridge	—	12	6	6	32,159	50	
Clark and Webb's	Bishop's Castle	—	—	4	—	11,815	67	100
	London and North-western	—	681	724	4	765,918	10	8
	London, Tilbury, and Southend	—	—	10	8	169	4	—
	North London	—	84	625	—	895,183	99	100
	Wrexham, Mold, and Con-nah's Quay.	—	—	35	—	8,733	100	38
	Ayrshire and Wigtownshire	—	—	10	—	—	29	—
Fay's	Brecon and Merthyr	—	—	38	—	77,177	88	100
	Great Western	—	—	127	—	285,708	2	3
	Lancashire and Yorkshire	—	—	6	—	—	—	—
	London and North-western	—	—	44	—	71,873	1	1
	Pontypridd, Caerphilly, and Newport.	—	—	4	—	4,700	100	100
Newall's	Furness	—	—	13	—	31,840	4	9
	Lancashire and Yorkshire	—	—	12	—	—	—	—
	Highland	—	—	134	—	216,621	17	46
Walter Parker Smith's Automatic.	Liskeard and Caradon	—	—	3	—	4,654	50	100
Smith's Vacuum	Cheshire Lines	—	—	34	—	—	8	—
	Manchester South Junction and Altrincham.	10	—	105	1	108,648	87	97
	Metropolitan	66	—	328	14	1,017,388	96	100
	South-eastern	58	10	877	648	2,703,112	41	96
	Belfast and Northern Counties	6	—	10	5	35,639	4	9
	Dublin, Wicklow, & Wexford	36	10	158	61	392,868	67	92
	Great Northern (Ireland)	84	—	318	—	1,001,139	66	100
	Great Southern and Western	175	—	433	86	930,158	83	99
	Midland Great Western	10	—	101	—	564,945	29	88
	Sligo, Leitrim, and Northern Counties.	5	—	16	—	15,308	100	31
	Waterford, Dungarvan, and Lismore.	1	—	—	—	—	—	—
Vacuum	Cambrian	2	10	71	28	127,616	36	24
	London and North-western	—	18	1,145	1,170	2,995,388	16	31
	London and North-western and Caledonian (West Coast Joint Stock).	—	—	3	—			
	North Staffordshire	31	39	159	157	338,650	44	64
Westinghouse Air Pressure.	Metropolitan District	54	—	350	—	756,226	100	100
Totals		539	864	5,912	2,188	13,473,337	11	17
Total Amount of Stock returned as FITTED with Continuous Brakes to 30th June 1890.		5,288 or 51 per cent.	4,746 or 45 per cent.	44,149 or 82 per cent.	7,644 or 14 per cent.	74,828,015 or 94 per cent.		
Amount of Stock FITTED with Continuous Brakes during the six months ending 30th June 1890.		258 or 2.5 per cent.	352 or 3 per cent.	2,260 or 4 per cent.	333 or 1 per cent.	Miles run by trains not fitted.		
Amount of Stock NOT FITTED with Continuous Brakes.		5,156 including 4,746 engines fitted with apparatus for working the continuous brake, or 49 per cent.		9,907 including 7,644 vehicles fitted with pipes and connections only, or 18 per cent.		4,683,933 or 6 per cent.		

NOTE.—The engines entered above as fitted with apparatus for working the continuous brake, have in most instances steam brakes which are worked in connexion with the continuous brake.

TABLE showing the NUMBER of VEHICLES in use on the RAILWAYS of the UNITED KINGDOM
TOTAL NUMBER in use on the RAILWAYS, and of the MILES run by PASSENGER TRAINS

NAME OF RAILWAY.	A. BRAKES WHICH APPEAR TO COMPLY WITH ONLY SOME OF THE CONDITIONS SPECIFIED IN THE CIRCULAR OF THE BOARD OF TRADE.											
	CLARK'S CHAIN AND CLARK AND WEBB'S.			PAY'S, NEWALL'S, AND PAY AND NEWALL'S.			SMITH'S VACUUM.			VACUUM.		
	Number of Vehicles		Miles run by Trains fitted with Con- tinuous Brakes.	Number of Vehicles		Miles run by Trains fitted with Con- tinuous Brakes.	Number of Vehicles		Miles run by Trains fitted with Con- tinuous Brakes.	Number of Vehicles		Miles run by Trains fitted with Con- tinuous Brakes.
	Fitted with Brakes.	Percent- age so Fitted.		Fitted with Brakes.	Percent- age so Fitted.		Fitted with Brakes.	Percent- age so Fitted.		Fitted with Brakes.	Percent- age so Fitted.	
ENGLAND and WALES.			Per cent.			Per cent.			Per cent.			Per cent.
Barry Dock and Railways	—	—	—	—	—	—	—	—	—	—	—	—
Bishop's Castle	4	67	100	—	—	—	—	—	—	—	—	—
Brecon and Merthyr	—	—	—	38	88	100	—	—	—	—	—	—
Cambrian	—	—	—	—	—	—	—	—	—	71	36	24
Cheshire Lines	—	—	—	—	—	—	34	8	—	—	—	—
Colne Valley and Halstead	—	—	—	—	—	—	—	—	—	—	—	—
East and West Junction	—	—	—	—	—	—	—	—	—	—	—	—
Eastern and Midlands	—	—	—	—	—	—	—	—	—	—	—	—
Furness	—	—	—	13	4	9	—	—	—	—	—	—
Great Eastern	—	—	—	—	—	—	—	—	—	—	—	—
Great Northern	—	—	—	—	—	—	—	—	—	—	—	—
Great Western	—	—	—	127	3	3	—	—	—	—	—	—
Hull, Barnsley, and West Riding Junction.	—	—	—	—	—	—	—	—	—	—	—	—
Isle of Wight Central	7	18	32	—	—	—	—	—	—	—	—	—
Lancashire and Yorkshire	—	—	—	18	1	—	—	—	—	—	—	—
Liskeard and Caradon	—	—	—	—	—	—	—	—	—	—	—	—
London and North-Western	724	10	8	44	1	1	—	—	—	1,118	16	31
London and South-Western	—	—	—	—	—	—	—	—	—	—	—	—
London, Brighton, and South Coast.	—	—	—	—	—	—	—	—	—	—	—	—
London, Chatham, and Dover	—	—	—	—	—	—	—	—	—	—	—	—
Londonderry	—	—	—	—	—	—	—	—	—	—	—	—
London, Tilbury, and Southend	10	4	—	—	—	—	—	—	—	—	—	—
Manchester, Sheffield, and Lincolnshire.	—	—	—	—	—	—	—	—	—	—	—	—
Manchester, South Junction, and Altrincham.	—	—	—	—	—	—	103	87	97	—	—	—
Mersey	—	—	—	—	—	—	—	—	—	—	—	—
Metropolitan	—	—	—	—	—	—	328	96	100	—	—	—
Metropolitan District	—	—	—	—	—	—	—	—	—	—	—	—
Midland	—	—	—	—	—	—	—	—	—	—	—	—
Midland and South Western Junction.	—	—	—	—	—	—	—	—	—	—	—	—
North-Eastern	—	—	—	—	—	—	—	—	—	—	—	—
North London	627	99	100	—	—	—	—	—	—	—	—	—
North Staffordshire	—	—	—	—	—	—	—	—	—	150	42	77
Pontypridd, Caerphilly, and Newport.	—	—	—	4	100	100	—	—	—	—	—	—
Rhondda and Swansea Bay	—	—	—	—	—	—	—	—	—	—	—	—
Rhymney	—	—	—	—	—	—	—	—	—	—	—	—
Seacombe, Hoylake, & Deeside	—	—	—	—	—	—	—	—	—	—	—	—
Severn & Wye & Severn Bridge	6	50	100	—	—	—	—	—	—	—	—	—
Somerset and Dorset	—	—	—	—	—	—	—	—	—	—	—	—
South-Eastern	—	—	—	—	—	—	877	41	96	—	—	—
Taff Vale	—	—	—	—	—	—	—	—	—	—	—	—
West Lancashire	—	—	—	—	—	—	—	—	—	—	—	—
Wrexham, Mold and Connah's Quay	35	100	88	—	—	—	—	—	—	—	—	—
Total	1,413	3	3	244	1	1	1,344	3	6	1,378	3	5

which are fitted with CONTINUOUS BRAKES, the proportion per cent. of VEHICLES so fitted to the so fitted to their TOTAL MILEAGE during the SIX MONTHS ended 30th June 1890.

B. BRAKES RETURNED BY THE COMPANIES AS COMPLYING WITH THE CONDITIONS SPECIFIED IN THE CIRCULAR OF THE BOARD OF TRADE.						C. ALL CONTINUOUS BRAKES.						NAME OF RAILWAY.
AUTOMATIC VACUUM.			WESTINGHOUSE AUTOMATIC.									
Number of Vehicles		Miles run by Trains fitted with Continuous Brakes.	Number of Vehicles		Miles run by Trains fitted with Continuous Brakes.	Number of Vehicles			Number of Miles Travelled by Trains			
Fitted with Brakes.	Percentage so Fitted.		Fitted with Brakes.	Percentage so Fitted.		Fitted with Brakes.	Not Fitted with Brakes.	Percentage Fitted with Brakes.	Fitted with Brakes.	Not Fitted.	Fitted per Cent.	
		Per cent.			Per cent.							ENGLAND and WALES.
37	100	100	—	—	—	37	—	100	23,333	—	100	Barry Dock and Railways.
—	—	—	—	—	—	4	2	67	11,815	—	100	Bishop's Castle.
—	—	—	—	—	—	38	5	83	77,177	—	100	Brecon and Merthyr.
—	—	—	—	—	—	71	127	36	127,816	410,800	24	Cambrian.
321	80	100	—	—	—	355	52	88	845,752	44	100	Cheshire Lines.
—	—	—	5	24	39	5	16	24	14,000	21,623	39	Colne Valley and Halstead.
—	—	—	11	61	82	11	7	61	50,414	10,873	82	East and West Junction.
—	—	—	57	34	76	57	110	34	134,480	43,090	76	Eastern and Midlands.
101	31	60	—	—	—	114	212	35	243,288	109,374	69	Furness.
—	—	—	3,405	100	99	3,405	12	100	4,981,895	34,020	89	Great Eastern.
2,278	79	100	—	—	—	2,278	713	79	4,457,323	4,578	100	Great Northern.
4,354	85	95	—	—	—	4,481	615	88	8,103,908	109,967	99	Great Western.
—	—	1	85	44.5	99	85	103	44.5	176,547	602	100	Hull, Barnsley, and West Riding Junction.
—	—	—	—	—	—	7	31	18	28,751	57,502	32	Isle of Wight Central.
3,243	98	100	—	—	—	3,264	22	99	4,673,680	—	100	Lancashire and Yorkshire.
—	—	—	—	—	—	3	3	50	4,654	—	100	Liskeard and Caradon.
4,175	57	59	—	—	—	6,091	1,199	84	9,656,833	144,902	99	London and North-Western.
2,439	81	100	—	—	—	2,499	591	81	4,468,436	16,087	100	London and South-Western.
—	—	—	2,675	93	100	2,675	106	93	3,502,073	895	100	London, Brighton, and South Coast.
12	1	1	762	72.5	59	774	279	73.5	1,024,000	681,595	60	London, Chatham, and Dover.
—	—	—	18	100	100	18	—	100	19,824	—	100	Londonderry.
—	—	—	245	91	100	255	14	95	353,304	—	100	London, Tilbury, and Southend.
826	79	100	—	—	—	826	226	79	1,669,110	4,483	100	Manchester, Sheffield, and Lincolnshire.
14	12	3	—	—	—	119	1	99	112,556	—	100	Manchester, South Junction, and Altrincham.
79	96	100	—	—	—	79	3	96	108,297	—	100	Mersey.
—	—	—	—	—	—	328	14	96	1,017,388	—	100	Metropolitan.
—	—	—	—	—	—	*350	Nil.	100	756,226	—	100	Metropolitan District.
3,984	89.5	96	202	4.5	—	4,196	259	94	6,547,571	290,472	96	Midland.
9	22	—	—	—	—	9	32	22	—	71,228	—	Midland and South-Western Junction.
—	—	—	2,977	100	100	2,977	10	100	5,154,814	2	100	North-Eastern.
—	—	—	—	—	—	627	4	99	895,183	—	100	North London.
40	11	—	—	—	—	199	174	53	522,450	86,720	86	North Staffordshire.
—	—	—	—	—	—	4	—	100	4,700	—	100	Pontypridd, Caerphilly, and Newport.
31	100	—	—	—	—	31	—	100	13,456	—	100	Rhondda and Swansea Bay.
—	—	—	56	72	100	56	22	72	85,024	—	100	Rhymney.
24	58	100	—	—	—	24	19	56	75,279	—	100	Seacombe, Hoylake, and Deeside.
—	—	—	—	—	—	6	6	50	32,159	—	100	Severn & Wye & Severn Bridge.
148	100	100	—	—	—	148	—	100	215,148	772	100	Somerset and Dorset.
602	28	—	—	—	—	1,479	678	69	2,703,112	110,333	96	South-Eastern.
212	97	99	—	—	—	212	7	97	172,762	1,650	99	Taff Vale.
—	—	—	25	23	97	25	64	28	113,193	3,501	97	West Lancashire.
—	—	—	—	—	—	35	—	100	8,733	14,245	38	Wrexham, Mold, and Connah's Quay.
22,992	50.5	57	10,523	24	24	38,247	6,383	86	63,227,514	2,037,468	96	Total.

* The entire stock of the Metropolitan District Company is fitted with the Westinghouse Non-automatic Brake.

TABLE showing the NUMBER of VEHICLES in use on the RAILWAYS of the UNITED KINGDOM
TOTAL NUMBER in use on the RAILWAYS, and of the MILES run by PASSENGER TRAINS so

NAME OF RAILWAY.	A. BRAKES WHICH APPEAR TO COMPLY WITH ONLY SOME OF THE CONDITIONS SPECIFIED IN THE CIRCULAR OF THE BOARD OF TRADE.											
	CLARK'S CHAIN AND CLARK AND WEBB'S.			FAY'S, NEWALL'S, AND FAY AND NEWALL'S.			SMITH'S VACUUM.			VACUUM.		
	Number of Vehicles		Miles run by Trains fitted with Con- tinuous Brakes.	Number of Vehicles		Miles run by Trains fitted with Con- tinuous Brakes.	Number of Vehicles		Miles run by Trains fitted with Con- tinuous Brakes.	Number of Vehicles		Miles run by Trains fitted with Con- tinuous Brakes.
	Fitted with Brakes.	Percent- age so Fitted.		Fitted with Brakes.	Percent- age so Fitted.		Fitted with Brakes.	Percent- age so Fitted.		Fitted with Brakes.	Percent- age so Fitted.	
SCOTLAND.			Per cent.			Per cent.			Per cent.			Per cent.
Ayrshire and Wigtownshire	10	31	—	—	—	—	—	—	—	—	—	—
Caledonian	—	—	—	—	—	—	—	—	—	—	—	—
Glasgow and South-Western	—	—	—	—	—	—	—	—	—	—	—	—
Great North of Scotland	—	—	—	—	—	—	—	—	—	—	—	—
Highland	—	—	—	134	17	46	—	—	—	—	—	—
North British	—	—	—	—	—	—	—	—	—	—	—	—
Total	10	—	—	134	2	2	—	—	—	—	—	—
IRELAND.												
Belfast and Northern Counties	—	—	—	—	—	—	10	1	9	—	—	—
Castlederg and Victoria Bridge	—	—	—	—	—	—	—	—	—	—	—	—
Cavan, Leitrim, and Ros- common.	—	—	—	—	—	—	—	—	—	—	—	—
Cork and Muskerry Light	—	—	—	—	—	—	—	—	—	—	—	—
Cork, Bandon, and South Coast	—	—	—	—	—	—	—	—	—	—	—	—
Dublin, Wicklow, and Wexford	—	—	—	—	—	—	158	67	92	—	—	—
Dundalk, Newry, and Greenore	—	—	—	—	—	—	—	—	—	—	—	—
Great Northern (Ireland)	—	—	—	—	—	—	318	66	100	—	—	—
Great Southern and Western	—	—	—	—	—	—	433	83	99	—	—	—
Midland Great Western	—	—	—	—	—	—	101	29	88	—	—	—
Sligo, Leitrim, and Northern Counties.	—	—	—	—	—	—	16	100	31	—	—	—
Waterford and Limerick	—	—	—	—	—	—	—	—	—	—	—	—
West Clare	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	1,036	39	64	—	—	—
UNITED KINGDOM	1,123	3	2	378	1	1	2,380	4	3	1,378	3	4

which are fitted with CONTINUOUS BRAKES, the proportion per cent. of VEHICLES so fitted to the fitted to their TOTAL MILEAGE during the SIX MONTHS ended 30th June 1890--continued.

B. BRAKES RETURNED BY THE COMPANIES AS COMPLYING WITH THE CONDITIONS SPECIFIED IN THE CIRCULAR OF THE BOARD OF TRADE.						C. ALL CONTINUOUS BRAKES.						NAME OF RAILWAY.
AUTOMATIC VACUUM.			WESTINGHOUSE AUTOMATIC.									
Number of Vehicles		Miles run by Trains fitted with Continuous Brakes.	Number of Vehicles		Miles run by Trains fitted with Continuous Brakes.	Number of Vehicles			Number of Miles Travelled by Trains			
Fitted with Brakes.	Percentage so Fitted.		Fitted with Brakes.	Percentage so Fitted.		F Brakes.	Not Fitted with Brakes.	Percentage Fitted with Brakes.	Fitted with Brakes.	Not Fitted.	Fitted per Cent.	
Per cent.			Per cent.									
SCOTLAND.												
—	—	—	6	19	50	16	16	50	23,598	23,618	50	Ayrshire and Wigtownshire.
—	—	—	1,295	63	97	1,324	762	64	3,041,381	75,046	98	Caledonian.
487	47	57	370	36	49	857	174	83	418,956	45,422	97	Glasgow and South-Western.
—	—	—	200	38	45	269	327	38	276,050	334,778	45	Great North of Scotland.
116	15	54	—	—	—	250	527	32	468,007	—	100	Highland.
—	—	—	1,660	72	88	1,080	641	72	2,924,754	309,445	88	North British.
603	9	12	3,531	52	75	4,307	2,474	64	8,152,948	924,222	90	Total.
IRELAND.												
147	63	70	—	—	—	157	77	67	800,527	80,539	79	Belfast and Northern Counties.
—	—	—	7	26	100	7	20	26	8,608	—	100	Castlederg and Victoria Bridge.
123	96	160	—	—	—	123	5	96	46,813	—	100	Cavan, Leitrim, and Roscommon.
17	35	100	—	—	—	17	32	35	35,328	—	100	Cork and Muskerry Light.
6	12	—	—	—	—	6	43	12	—	98,937	—	Cork, Bandon, and South Coast.
—	—	—	—	—	—	158	78	67	392,838	35,925	92	Dublin, Wicklow, and Wexford.
8	32	—	—	—	—	8	17	32	—	37,714	—	Dundalk, Newry, and Greenore.
60	12	—	—	—	—	373	107	78	1,001,139	—	100	Great Northern (Ireland).
6	1	1	—	—	—	439	86	84	946,887	—	100	Great Southern and Western.
100	32	12	—	—	—	210	135	61	641,617	—	100	Midland Great Western.
—	—	—	—	—	—	16	—	100	15,308	33,941	31	Sligo, Leitrim, and Northern Counties.
10	7	6	—	—	—	10	134	7	23,282	337,180	6	Waterford and Limerick.
66	100	100	—	—	—	66	—	100	26,178	—	100	West Clare.
552	21	11	7	—	—	1,595	1,050	60	3,447,555	1,122,243	75.5	Total.
24,147	45	48	14,061	26	30	44,149	9,907	82	74,828,015	4,883,933	94	UNITED KINGDOM.

No. 1.

RETURN for the Six Months ending on the 30th day of June 1890, of the AMOUNT running on

NAME OF RAILWAY COMPANY.	Name and Description of Brake or Brakes adopted by the Company, and in use on Passenger Trains on Lines worked by them.	(1.) Whether the Brakes are instantaneous in action, and capable of being applied by engine-driver and guards. (2.) Whether self-acting. (3.) Whether capable of being applied to every vehicle of a train. (4.) Whether in regular use in daily working. (5.) Whether the materials employed are of a durable character, easily maintained, and kept in order.	AMOUNT OF STOCK FITTED WITH			
			Number of Engines and Tenders (used for Passenger Trains) in which the Continuous Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of Passenger Carriages.	
					Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for connecting the Brake.
ENGLAND AND WALES.						
AYLESBURY AND BUCKINGHAM.	Vacuum same as used over G.W.R.	(1.) Yes. (2.) — (3.) On all, but goods waggons, milk vans, &c. (5.) Yes.	—	—	—	—
BARRY DOCK AND RAILWAYS.	Smith's automatic vacuum brake.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	3	—	37	—
BISHOP'S CASTLE	Webb's chain -	(1.) Yes, and applied by guard only. (2.) Yes. (3.) No, only to passenger vehicles and guard's van. (4.) Yes. (5.) Yes.	—	—	4	—
BRECON AND MERTHYR TYDFIL JUNC.	Fay's - -	(1.) By guard. (2.) No. (3.) Yes. (4.) Yes. (5.) Yes.	—	—	38	—
BRISTOL PORT RAILWAY AND PIER.	No continuous brakes	—	—	—	—	—
CAMERIAN - -	Vacuum - -	(1.) Yes. Applied only by engine-driver. (2.) Self-acting on vans in case of a break-away. (3.) Yes. (4.) Yes. (5.) Yes.	2	*10	64	13
CHESHIRE LINES COMMITTEE.	Vacuum automatic -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	* In process of conversion to automatic working.		318 and 3 saloons.	—
	Vacuum - -	(1.) Yes. Capable of being applied by driver only. (2.) No. (3.) Yes. (4.) No, only occasionally (5.) Yes.	—	—	34	—
COLNE VALLEY AND HALSTEAD.	Westinghouse automatic.	(1.) Guard and driver. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	3 tank	—	4	6
CORRIS - - -	No continuous brakes	—	—	—	—	—
EAST AND WEST JUNCTION.	Westinghouse automatic.	(1.) Yes. (2.) Yes. (3.) Yes, if fitted. (4.) Yes, when required. (5.) Yes.	3	—	8	—
EASTERN AND MIDLANDS.	Westinghouse automatic.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes, on main line. (5.) Yes.	18	—	51	26
FESTINIOG - -	No continuous brakes	—	—	—	—	—
FURNESS - -	Vacuum automatic - (Smith's.)	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes, except india-rubber connections.	24 engines, and tenders.	4 engines, and tenders.	81	11
	Newall's patent -	(1.) No. Guard only. (2.) No. (3.) Yes. (4.) Yes. (5.) Yes.	—	—	9	—
GARSTANG AND KNOT END.	No continuous brakes	Only one carriage in regular use, to which a hand-brake reaching each wheel is applied at every stoppage.	—	—	—	—
GOLDEN VALLEY -	No continuous brakes	—	—	—	—	—

NOTE.—In Return No. 1 the amount and description of stock fitted with two or more descriptions of continuous

No. 1.

and DESCRIPTION of CONTINUOUS BRAKE POWER in use on the Passenger Trains
Railways.

CONTINUOUS BRAKES.		AMOUNT OF STOCK NOT FITTED WITH CONTINUOUS BRAKES.		AMOUNT OF STOCK FITTED DURING THE ABOVE SIX MONTHS.				Special Rules under which the Continuous Brakes are worked.
Vehicles.		Number of Engines and Tenders used for Passenger Trains.	Number of Passenger Carriages and other Vehicles used for Passenger Trains.	Number of Engines and Tenders (used for Passenger Trains) in which the Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of Passenger Carriages and other Vehicles used for Pas- senger Trains.		
Other Vehicles used for Passenger Trains.						Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for con- necting the Brake.	
Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for con- necting the Brake.							
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	17	—	Brakes are used for every stoppage.
—	—	2	2	—	—	—	—	Same as London and North-Western, <i>see</i> page 95. The brake is used for every stoppage.
—	—	31	5	—	—	—	—	—
—	—	2	19	—	—	—	—	—
7	15	40	99	2	—	12	—	The brakes are not used for every stoppage. For special rules <i>see</i> page 89.
—	52	—	—	—	—	—	—	The brakes are used for every stoppage.
—	—	—	—	—	—	—	—	
1	1 horse box	—	9	1	—	—	—	Usual Westinghouse rules.
—	—	3	10	—	—	—	—	—
3 brake vans	2 horse boxes	4	5	—	—	—	—	Not used for every stoppage but only in cases of emergency. The rules of the Westinghouse Brake Co. (Limited) and of the Vacuum Brake Company, Limited, <i>see</i> p. 90.
6	60 (22 also fitted with vacuum pipes.)	5	24	1	—	—	3 2 of which are fitted with vacuum brakes as well.	—
—	—	6	58	—	—	—	—	—
20 vans	7 vans, 2 milk trucks, 20 carriage trucks, 21 horse boxes, 10 meat vans	6 engines	141	5	—	9	—	The brakes are used for every stoppage. For special rules <i>see</i> page 90.
4	—	—	—	—	—	—	—	—
—	—	2	4	—	—	—	—	—
—	—	2	8	—	—	—	—	—

brakes or pipes and connections are printed in italics and not included in total on p. 31. For Summary see p. 32.

NAME OF RAILWAY COMPANY.	Name and Description of Brake or Brakes adopted by the Company, and in use on Passenger Trains on Lines worked by them.	(1.) Whether the Brakes are instantaneous in action, and capable of being applied by engine-driver and guards. (2.) Whether self-acting. (3.) Whether capable of being applied to every vehicle of a train. (4.) Whether in regular use in daily working. (5.) Whether the materials employed are of a durable character, easily maintained, and kept in order.	AMOUNT OF STOCK FITTED WITH			
			Number of Engines and Tenders (used for Passenger Trains) in which the Continuous Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of	
					Passenger Carriages.	Fitted only with Chains or Pipes and Connections for connecting the Brake.
					Fitted with Brake Gear complete.	
GREAT EASTERN -	Westinghouse automatic.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	447 engines, 207 tenders. 7 of the 447 engines are also fitted with apparatus for applying vacuum brake.	2	2,560 28 of these are fitted with the vacuum pipes.	3 2 of these are also fitted with vacuum pipes.
GREAT NORTHERN -	Vacuum automatic -	(1.) The brakes are instantaneous in action and capable of being applied by driver and guards. (2.) No. (3.) Yes. (4.) Yes. (5.) Yes.	514 engines, 412 tenders.	15 engines, 11 tenders.	1,820 G.N. 167 East Coast Joint Stock, 3 Pullman cars.	85 G.N.
	Westinghouse automatic.	As above - - - -	-	-	5 G. N., 167 East Coast Joint Stock.	207 G. N. 3 Pullman cars.
GREAT WESTERN -	Automatic vacuum -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	-	1,565	3,785	-
	Fay's hand -	(1.) Applied by guard only. (2.) No. (3.) No. To four or five carriages only. (4.) Yes. (5.) Yes.	-	-	127	-
HULL, BARNSLEY, AND WEST RIDING JUNCTION.	Westinghouse automatic.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	21 engines, 16 tenders.	-	85	-
	Vacuum automatic -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	12 engines, 12 tenders.	-	-	-
ISLE OF WIGHT -	No continuous brakes	-	-	-	-	-
ISLE OF WIGHT CENTRAL.	Clark's chain brake, also Westinghouse automatic.	(1.) Quick in action; applied by guard only. (2.) Self-acting as respects Westinghouse only. (3.) Yes. (4.) Yes. (5.) Yes.	1	-	7	-
LANCASHIRE AND YORKSHIRE.	Vacuum automatic -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes, excepting the india-rubber connections, and sleeves in engines.	218 tender engines and 172 tank engines. In addition to the above 300 goods tender engines are fitted with automatic vacuum brakes for ordinary and special passenger work if required.	-	2,208 and 557 duplicates.	-
	Fay's -	(1.) Yes, and can be made capable of being applied by driver and guard. (2.) No. (3.) Yes, but they are never applied to more than 5 carriages of a train. (4.) Yes. (5.) Yes.	-	-	2	-
	Newall's -	-	-	-	-	-

CONTINUOUS BRAKES.		AMOUNT OF STOCK NOT FITTED WITH CONTINUOUS BRAKES.		AMOUNT OF STOCK FITTED DURING THE ABOVE SIX MONTHS.				Special Rules under which the Continuous Brakes are worked.
Vehicles.		Number of Engines and Tenders used for Passenger Trains.	Number of Passenger Carriages and other Vehicles used for Passenger Trains.	Number of Engines and Tenders (used for Passenger Trains) in which the Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of Passenger Carriages and other Vehicles used for Pas- senger Trains.		
Other Vehicles used for Passenger Trains.						Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for connect- ing the Brake.	
Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for connect- ing the Brake.							
845 3/2 of these are also fitted with vacuum pipes.	9 1 of these is also fitted with vacuum pipes.	—	—	10 engines	—	128	—	Drivers are not to rely on continuous brakes when approaching junctions or terminal stations. The brake is used for every stoppage.
261 G.N. 27 East Coast Joint Stock.	178 horse boxes, 114 carriage trucks, 8 par- cel, &c. vans, 328 fish, &c. waggons.	—	—	35 engines, 29 tenders.	—	48 G.N. pas- senger car- riages, 11 luggage, &c. vans, 3 E.C.J.S. passenger carriages. 4 luggage carriages.	10 horse boxes, &c. 12 covered meat waggons.	See page 92. The brake is used for every stoppage.
1 G.N. 27 East Coast Joint Stock luggage, &c. vans.	422 vehicles.	Note.—The stock shown as fitted with the Westinghouse brake is included above.				3 G. N. passenger carriages, and 1 van and 30 E.C.J.S. passenger carriages and 4 vans. 123	1 passenger carriage and 10 horse boxes, &c. G.N.	—
569	615	—	—	—	125	(Brake taken off 16.)	—	Brake is used for every stoppage. For regulations see page 93.
—	—	—	—	—	—	(Brake taken off 29 vehicles)	—	Brake is used for every stoppage.
—	106	1 engine, 1 tender.	—	—	—	—	25	The brakes are used for every stoppage.
—	90	—	—	—	—	—	—	
—	—	8 tank	52, and 132 waggons.	—	—	—	—	
—	—	6	31	1	—	3	—	—
418 and 63 duplicates.	—	11	22	8 passenger tank engines, and 25 goods tender engines.	—	4 and 16 duplicates.	—	The brakes are used for every stoppage. For copy of printed instructions, see page 94.
4	—	—	—	—	—	—	—	Are not allowed to skid.
12	—	—	—	—	—	—	—	

NAME OF RAILWAY COMPANY.	Name and Description of Brake or Brakes adopted by the Company, and in use on Passenger Trains on Lines worked by them.	(1.) Whether the Brakes are instantaneous in action, and capable of being applied by engine-driver and guards. (2.) Whether self-acting. (3.) Whether capable of being applied to every vehicle of a train. (4.) Whether in regular use in daily working. (5.) Whether the materials employed are of a durable character, easily maintained, and kept in order.	AMOUNT OF STOCK FITTED WITH			
			Number of Engines and Tenders (used for Passenger Trains) in which the Continuous Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of Passenger Carriages.	
					Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for connecting the Brake.
LANCASHIRE AND YORKSHIRE—cont.	Vacuum automatic and Westinghouse.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes, except india-rubber connections.	—	—	2	—
					Note.—42 carriages fitted with complete vacuum automatic brake gear, also Westinghouse pipes, are included in the number of vehicles fitted with the vacuum automatic brake. 68 waggons fitted with vacuum automatic brake gear complete and 10 waggons fitted with vacuum automatic pipes only.	
LISKEARD AND CARDON.	WalterParkerSmith's automatic.	(1.) Yes, by guard only. (2.) Yes. (5.) Yes. (4.) Yes. (5.) Yes.	—	—	3	—
LONDON AND NORTH-WESTERN.	Automatic vacuum -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	The engines and tenders are fitted with a separate steam brake, which, however, is actuated by the same handle used for applying the vacuum brake.	664 (There are also 498 other engines fitted which can be used for working passenger trains.)	3,004 (197 of these are also fitted with the Westinghouse brake).	—
	Simple vacuum	(1.) Yes; is applied by the driver. (2.) Self-acting on the vans in case of a breakaway. (3.) Yes. (4.) Yes. (5.) Yes.	See above	15* (There are also 3* other engines fitted which can be used for working passenger trains.)	1,091 (59 of these are also fitted with Westinghouse brake.)	15
	Clark's chain, better known as Clark and Webb's.	(1.) The brake is practically instantaneous in action, the wheels having to make about three revolutions before it is fully on. (2.) Self acting in sections in case of a breakaway, but not from any other cause. It cannot creep on when not required to do so whilst the engine is running at speed, all danger on that score being consequently avoided. (3.) The brake is capable of being applied to every vehicle in the train when the stock is fitted. (4.) The brake is only to be used when specially quick stops are required, but it is tested at the first stop made by each train, and the connections are tried before starting. NOTE.—In close coupled or "omnibus" trains, such as those running over the North London and Metropolitan District Railways, half the brake power is used for the ordinary stops, the other half and the power brake on the engine being used on emergency, or when specially quick stops are required. (5.) Yes.	—	681 (438 engines and tenders, and 243 tank engines.) Out of this number 672 are fitted with power brake. All the above engines, except 23, are fitted with screw reversing gear, which enables the driver, when the engine is running at speed, to bring the whole power of the engine on the opposite side of the piston, and thus acts as a powerful brake.	709	—
	Fay's continuous	(1.) No (2.) No, applied by guard only (3.) Yes (4.) Yes. (5.) Yes.	—	—	44	—

* Exclusive of the engines also fitted with automatic vacuum brake.

CONTINUOUS BRAKES.		AMOUNT OF STOCK NOT FITTED WITH CONTINUOUS BRAKES.		AMOUNT OF STOCK FITTED DURING THE ABOVE SIX MONTHS.				Special Rules under which the Continuous Brakes are worked.
Vehicles.		Number of Engines and Tenders used for Passenger Trains.	Number of Passenger Carriages and other Vehicles used for Passenger Trains.	Number of Engines and Tenders (used for Passenger Trains) in which the Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of Passenger Carriages and other Vehicles used for Pas- senger Trains.		
Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for con- necting the Brake.					Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for con- necting the Brake.	
—	—	—	—	—	—	—	—	The brakes are used for every stoppage. For special rules see page 95.
—	—	3	3	—	—	—	—	
869 (8 of these are also fitted with the Westing- house brake.)	—	—	25	—	80 (14 of those returned in previous half years have been since cut up.)	860	—	
54 (10 of these are also fitted with Westinghouse brake.)	1,155	—	—	—	48 (17 of those returned in the pre- vious half years have since been cut up.)	—	—	
15	4	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—

NAME OF RAILWAY COMPANY.	Name and Description of Brake or Brakes adopted by the Company, and in use on Passenger Trains on Lines worked by them.	(1.) Whether the Brakes are instan- taneous in action, and capable of being applied by engine-driver and guards. (2.) Whether self-acting. (3.) Whether capable of being applied to every vehicle of a train. (4.) Whether in regular use in daily working. (5.) Whether the materials employed are of a durable character, easily maintained, and kept in order.	AMOUNT OF STOCK FITTED WITH			
			Number of Engines and Tenders (used for Passenger Trains) in which the Continuous Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of	
					Passenger Carriages.	
					Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Con- nections for connecting the Brake.
LONDON AND NORTH- WESTERN AND CALEDONIAN. (West Coast.)	Automatic vacuum -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	See Note A.		198 C.	—
	Simple vacuum	(1.) Yes; is applied by the driver. (2.) Self-acting on the vans in case of a breakaway. (3.) Yes. (4.) Yes. (5.) Yes.	See Note A.		2 C.	—
LONDON AND SOUTH- WESTERN.	Vacuum automatic -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	492 engines and 364 tenders.	14 engines	1,843	230
LONDON, BRIGHTON, AND SOUTH COAST.	Westinghouse con- tinuous automatic air.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	227 tank, 129 tender. (These in- clude a number of goods engines which occa- sionally work passenger trains.) 108	—	2,190	45
LONDON, CHATHAM, AND DOVER.	Westinghouse auto- matic air.	(1.) The brakes get into action very quickly, and can be applied by engine-driver and guard. (2.) In case of a train parting and breaking connection pipes, or failure of working parts of brake, the brake is self- acting. (3.) Yes. (4.) Yes. (5.) The materials generally are of a durable character, except the india- rubber or hose coupling connections between the carriages, which have given much trouble by bursting. Careful attention is required to keep the brakes in working order.			653	1 saloon
	Automatic vacuum -	(1.) The brakes are instantaneous in action, and capable of being applied by engine-driver and guards. (2.) In case of a train parting and breaking connection pipes, or failure of working parts of brake, the brake is self- acting. (3.) Applied to every vehicle in the train. (4.) Yes, in regular use in daily working. (5.) The materials generally are of a durable character.	2	—	9	—
LONDONDERRY -	Westinghouse auto- matic.	(1.) Instantaneous in action. Can be applied by driver and guard. (2.) Self-acting. (3.) Can be applied to every vehicle of a train. (4.) In daily use. (5.) Materials of the best kind, and kept in order.	3 tank engines.	—	16	—
LONDON, TILBURY, AND SOUTHEAST.	Westinghouse auto- matic.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	30	—	237	—
	Clark and Webb's chain.	(1.) Applied by guard. (2.) No. (3.) Yes. (4.) Little used. (5.) Yes.	—	—	10	8
MANCHESTER AND MILFORD.	No continuous brakes.	—	—	—	—	—
MANCHESTER, SHEF- FIELD, AND LIN- COLNSHIRE.	Vacuum automatic -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	166 and 168* goods engines.	8	803	38

* Available for passenger trains as occasion may require.

CONTINUOUS BRAKES.		AMOUNT OF STOCK NOT FITTED WITH CONTINUOUS BRAKES.		AMOUNT OF STOCK FITTED DURING THE ABOVE SIX MONTHS.				Special Rules under which the Continuous Brakes are worked.
Vehicles.		Number of Engines and Tenders used for Passenger Trains.	Number of Passenger Carriages and other Vehicles used for Passenger Trains.	Number of Engines and Tenders (used for Passenger Trains) in which the Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of Passenger Carriages and other Vehicles used for Pas- senger Trains.		
Other Vehicles used for Passenger Trains.						Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for con- necting the Brake.	
Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for con- necting the Brake.							
104 C.	—	See Note A.		See Note A.		18	—	—
1 C.	—	See Note A.		See Note A.		—	—	—
NOTE A.—There are no joint engines and tenders, the carriages being worked in the ordinary trains over each Company's line by its own engines and tenders. NOTE B.—This Return applies to West Coast passenger carriages and other vehicles, so far only as they run over the London and North-western Railway to or from Carlisle. NOTE C.—All these vehicles are fitted with the Westinghouse automatic pressure brake also.								
656	361	2 engines	—	15 engines and 2 tenders.	2	68	—	For instructions see page 98. Brake is used for every stoppage. See page 100. The brake is used for every stoppage.
485	136	—	15	3 tank 6 tender engines. Brake taken off 1 tender engine.	—	54 Brakes taken off 13 vehicles.	9	
109	1 luggage van.	54 (19 tanks)	274	27	—	196	—	Brake is used or every stoppage. For special rules see page 101.
3	3 luggage vans.	—	—	—	—	—	—	Brake is used for every stoppage. For special rules see page 101.
2 vans	—	—	—	—	—	—	—	Ordinary rules.
8	6	—	—	—	—	—	—	The brake is used for every stoppage. For special rules see page 101.
—	—	—	—	—	—	—	—	—
—	—	4	18	—	—	—	—	—
23	188	—	—	13	1	106	2	The brakes are used for every stoppage.

NAME OF RAILWAY COMPANY.	Name and Description of Brake or Brakes adopted by the Company, and in use on Passenger Trains on Lines worked by them.	(1.) Whether the Brakes are instantaneous in action, and capable of being applied by engine-driver and guards. (2.) Whether self-acting. (3.) Whether capable of being applied to every vehicle of a train. (4.) Whether in regular use in daily working. (5.) Whether the materials employed are of a durable character, easily maintained, and kept in order.	AMOUNT OF STOCK FITTED WITH			
			Number of Engines and Tenders (used for Passenger Trains) in which the Continuous Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of	
					Passenger Carriages.	Fitted only with Chains or Pipes and Connections for connecting the Brake.
MANCHESTER SOUTH JUNCTION AND ALTRINCHAM.	Smith's vacuum -	(1.) Almost instantaneous, applied by engine-drivers only. (2.) No. (3.) Yes. (4.) Yes. (5.) Yes.	10	—	105	—
	Vacuum automatic -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	2	—	14	—
MARYPORT AND CARLISLE.	No continuous brakes.	—	—	—	—	—
MAWDDWY -	No continuous brakes.	—	—	—	—	—
MERSEY -	The vacuum continuous automatic brake, with universal coupling.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	6 tank engines.	9 tank engines fitted with a steam brake arranged to work automatically with continuous brakes.	79	—
METROPOLITAN DISTRICT.	Westinghouse air pressure.	(1.) Practically instantaneous. Applied by drivers only at every stoppage. (2.) No. (3.) Yes. (4.) Yes. (5.) Yes.	54 engines	—	350	—
METROPOLITAN -	Smith's vacuum -	(1.) Practically instantaneous, and capable of being applied by driver only. (2.) No. (3.) Yes. (4.) Yes. (5.) Yes.	66 tank engines.	—	328	—
MIDLAND -	Vacuum automatic -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Some of the materials are durable, others not.	—	967 (932 have automatic and 35 non-automatic steam brakes to engine and tender wheels combined with vacuum automatic brake for train.)	2,596	25
	Westinghouse automatic air.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Some of the materials are durable, others not.	46 (All are fitted also with apparatus for working the vacuum automatic brake on train.)	—	69	83
	Westinghouse automatic air brake on Midland Scotch Joint Stock.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Some of the materials are durable, others not.	—	—	65	—

CONTINUOUS BRAKES.		AMOUNT OF STOCK NOT FITTED WITH CONTINUOUS BRAKES.		AMOUNT OF STOCK FITTED DURING THE ABOVE SIX MONTHS.				Special Rules under which the Continuous Brakes are worked.
Vehicles.		Number of Engines and Tenders used for Passenger Trains.	Number of Passenger Carriages and other Vehicles used for Passenger Trains.	Number of Engines and Tenders (used for Passenger Trains) in which the Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of Passenger Carriages and other Vehicles used for Pas- senger Trains.		
Other Vehicles used for Passenger Trains.						Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for connect- ing the Brake.	
Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for connect- ing the Brake.							
—	1	—	—	—	—	—	—	The brake is used for every stoppage.
The engine driver must not depend entirely upon the power and action of the brake, but when approaching terminal stations or junctions must have his train so well under control, that it may be brought to a standstill with the hand brakes and without the use of the continuous brake. The hand brakes in guards' vans to be kept free in order that the brakes may be used in cases of emergency.								
—	—	—	—	—	—	—	—	The brake is used for every stoppage.
—	—	8 (Fitted with powerful steam brakes.)	60	—	—	—	—	—
—	—	2	5	—	—	—	—	—
—	2 vans - 1 truck.	—	—	—	—	—	—	See page 103. Brakes are used for every stoppage.
—	—	—	—	—	—	—	—	—
—	14 carriage trucks.	—	—	—	—	—	—	See page 103. The brake is used for every stop- page.
1,888	1	—	—	—	74 (all fitted with automatic steam brakes to engine and tender wheels combined with vacuum auto- matic brake for train.)	78	—	—
48	150	—	—	—	—	—	—	See page 104. The brakes are used for all stoppag es.
20	—	—	—	—	—	—	—	—

NAME OF RAILWAY COMPANY.	Name and Description of Brake or Brakes adopted by the Company, and in use on Passenger Trains on Lines worked by them.	(1.) Whether the Brakes are instan- taneous in action, and capable of being applied by engine-driver and guards. (2.) Whether self-acting. (3.) Whether capable of being applied to every vehicle of a train. (4.) Whether in regular use in daily working. (5.) Whether the materials employed are of a durable character, easily maintained, and kept in order.	AMOUNT OF STOCK FITTED WITH																																																
			Number of Engines and Tenders (used for Passenger Trains) in which the Continuous Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of																																														
					Passenger Carriages.																																														
					Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Con- nections for connecting the Brake.																																													
MIDLAND AND SOUTH- WESTERN JUNCTION.	The Company's trains are now being fitted with the automatic vacuum brake, which is to some extent in use.	—	—	3	9	—																																													
NEATH AND BRECON	No continuous brakes.	—	—	—	—	—																																													
NORTH-EASTERN	Westinghouse auto- matic.	(1.) Practically instantaneous, and can be applied by either engine-driver or guards. (2.) It is self-acting. (3.) It is capable of being applied to every vehicle of a train. (4.) It is in regular use in daily working. (5.) The materials used are generally of a durable character, easily maintained, and kept in order.	434 engines, 268 tenders. 137 goods engines. See statement below.	5 engines, 6 tenders.	2,217	—																																													
	Vacuum automatic brake (as used on Midland Railway).	(1.) Not instantaneous, and can be applied by either engine-driver or guards. (2.) It is self-acting. (3.) It is capable of being applied to every vehicle of a train. (4.) It is in occasional use. (5.) The materials are to a considerable extent of a durable character, easily maintained and kept in order.	NOTE.—5 engines and 5 tenders fitted so as to work brake on train only, 6 engines, 6 tenders, 66 carriages, and 18 vans, included in return of stock fitted with Westinghouse brake, are also fitted with this automatic vacuum brake, and 143 carriages and 397 other vehicles in- cluded in stock fitted with Westinghouse brake are also fitted with the automatic vacuum brake connecting pipes, for the purpose of working in connexion with other Companies' trains over the North-Eastern system.																																																
SUPPLEMENTARY STATEMENT to the above No. 1 RETURN.—The Company have 137 goods engines which run excursion and other occasional passenger trains, and these are fitted with the Westinghouse brake gear complete.																																																			
NORTH LONDON	Clark and Webb's chain brake (duplic- ate stock partly fitted with Clark's old chain brake).	(1.) Practically instantaneous, and can be applied by engine-driver and guards. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	—	63 standards 21 duplicates.	<table><tr><td>Clark and Webb's Brake,</td><td>Clark's old Chain Brake,</td><td>—</td></tr><tr><td colspan="3">Standards.</td></tr><tr><td>120</td><td>—</td><td>1st class.</td></tr><tr><td>126</td><td>—</td><td>2nd "</td></tr><tr><td>132</td><td>—</td><td>3rd "</td></tr><tr><td>47</td><td>—</td><td>Composites.</td></tr><tr><td>84</td><td>—</td><td>Brake-vans.</td></tr><tr><td>509</td><td>—</td><td>Total.</td></tr><tr><td colspan="3">Duplicates.</td></tr><tr><td>10</td><td>—</td><td>1st class.</td></tr><tr><td>30</td><td>—</td><td>2nd "</td></tr><tr><td>42</td><td>—</td><td>3rd "</td></tr><tr><td>16</td><td>—</td><td>Composites.</td></tr><tr><td>13</td><td>2*</td><td>Brake-vans.</td></tr><tr><td>116</td><td>2*</td><td>Total.</td></tr></table>	Clark and Webb's Brake,	Clark's old Chain Brake,	—	Standards.			120	—	1st class.	126	—	2nd "	132	—	3rd "	47	—	Composites.	84	—	Brake-vans.	509	—	Total.	Duplicates.			10	—	1st class.	30	—	2nd "	42	—	3rd "	16	—	Composites.	13	2*	Brake-vans.	116	2*	Total.	* Used singly as servants' carriages.
Clark and Webb's Brake,	Clark's old Chain Brake,	—																																																	
Standards.																																																			
120	—	1st class.																																																	
126	—	2nd "																																																	
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CONTINUOUS BRAKES.		AMOUNT OF STOCK NOT FITTED WITH CONTINUOUS BRAKES.		AMOUNT OF STOCK FITTED DURING THE ABOVE SIX MONTHS.				Special Rules under which the Continuous Brakes are worked.
Vehicles.		Number of Engines and Tenders used for Passenger Trains.	Number of Passenger Carriages and other Vehicles used for Passenger Trains.	Number of Engines and Tenders (used for Passenger Trains) in which the Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of Passenger Carriages and other Vehicles used for Pas- senger Trains.		
Other Vehicles used for Passenger Trains.						Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for con- necting the Brake.	
Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for con- necting the Brake.							
—	15	3	17	—	3	6	—	—
—	—	5 engines (Used for mixed trains.)	6 (Used for mixed trains.)	—	—	—	—	—
760	8	1 small tank engine.	1 special carriage, 1 other vehicle.	1 old engine and tender, brake taken off.	—	28 carriages (new stock).		See page 106. The brake is used for every stop- page.
NOTE.—The carriages above referred to do not include those belonging jointly to the East Coast companies which mainly compose the express and fast trains running between London and Scotland, and which are fitted with continuous brakes.								
—	—	—	—	—	5 engines, 5 tenders.	1 carriage and 2 other vehicles.	27 other vehicles, 3 taken off carriages.	The brake is used for every stop- page.

The Company have 895 vehicles (which are not included in their passenger stock, but which occasionally run with passenger trains) fitted with brakes, as below :—

11 with Westinghouse brake gear complete.

884 with Westinghouse brake connecting pipes, and 676 of these are also fitted with the automatic vacuum brake connecting pipe.

895 Total.

—	—	—	—	—	—	Standards. 3rd class 6 (to replace carriages duplicated).	—	The brakes are used for every stoppage.
			Standards. —					
			Duplicates. 2nd class 4					

NAME OF RAILWAY COMPANY.	Name and Description of Brake or Brakes adopted by the Company, and in use on Passenger Trains on Lines worked by them.	(1.) Whether the Brakes are instan- taneous in action, and capable of being applied by engine-driver and guards. (2.) Whether self-acting. (3.) Whether capable of being applied to every vehicle of a train. (4.) Whether in regular use in daily working. (5.) Whether the materials employed are of a durable character, easily maintained, and kept in order.	AMOUNT OF STOCK FITTED WITH			
			Number of Engines and Tenders (used for Passenger Trains) in which the Continuous Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of	
					Passenger Carriages.	Fitted only with Chains or Pipes and Con- nections for connecting the Brake.
NORTH STAFFORD- SHIRE.	Vacuum - -	(1.) Yes. Driver only. (2.) No. (3.) Yes. (4.) Yes. (5.) Yes.	31 tender engines, with vacuum brake on tender and steam brake on engine.	39 (9 engines and tenders and 30 tank engines) fitted with steam brakes.	134	77
	Westinghouse -	(1.) Yes. Driver only. (2.) No. (3.) Yes. (4.) Yes. (5.) Yes.	—	—	—	4
	Automatic vacuum -	(1.) Yes; applied by driver and guard. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	8 engines and tenders.	—	35	—
NORTH WALES NAR- ROW GAUGE.	No continuous brakes.	—	—	—	—	—
PUMBROKE AND TENBY.	No continuous brakes.	—	—	—	—	—
PONTYPRIDD, CAER- PHILLY, AND NEW- PORT.	Fay's - -	(1.) Not instantaneous. By guard only. (2.) No. (3.) Yes. (4.) Yes. (5.) Yes.	—	—	4	—
RAVENGLASS AND ESKDALE.	No continuous brakes.	—	—	—	—	—
RHONDDA AND SWANSEA BAY.	Automatic vacuum -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	6 tank	—	31	—
RHYMNEY - -	Westinghouse auto- matic.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	4 tank engines, 6 tender engines. Brake applied to tender wheels. Steam brake on wheels of tender engines.	8 tank engines.	45	17
SEACOMBE, HOY- LAKE, AND LEE- SIDE.	Automatic vacuum -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	7	—	24	6
SEVERN AND WYE AND SEVERN BRIDGE.	Clark's chain -	(1.) Yes. (2.) No. (3.) Yes, of pas- senger carriages. (4.) Yes. (5.) Yes.	—	12 engines All engines have independent brakes, but driver by means of a cord has control of the brakes on the passenger carriages.	6	6

CONTINUOUS BRAKES.		AMOUNT OF STOCK NOT FITTED WITH CONTINUOUS BRAKES.		AMOUNT OF STOCK FITTED DURING THE ABOVE SIX MONTHS.				Special Rules under which the Continuous Brakes are worked.
Vehicles.		Number of Engines and Tenders used for Passenger Trains.	Number of Passenger Carriages and other Vehicles used for Passenger Trains.	Number of Engines and Tenders (used for Passenger Trains) in which the Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of Passenger Carriages and other Vehicles used for Pas- senger Trains.		
Other Vehicles used for Passenger Trains.	Fitted only with Chains or Pipes and Connections for con- necting the Brake.					Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for con- necting the Brake.	
25	80	—	13	—	1 tank engine and 3 tenders (steam brake on engines).	—	40	See page 108.
—	—	—	—	—	—	—	—	
5	—	—	—	6 tender engines (5 of which converted from simple to automatic).	—	37	—	
—	—	3	8 carriages, 114 waggons.	—	—	—	—	
—	—	7 engines, 5 tenders.	33	—	—	—	—	
—	—	1	—	—	—	—	—	
—	—	2	4	—	—	—	—	
—	—	—	—	6	—	31	—	
9 partly brake vans and partly 3rd class. 2 brake vans.	3 brake vans, 1 carriage truck, 1 horse box.	—	—	—	1	14	Guards and drivers are at all times to satisfy themselves that the brake is in proper order, and to make use of the con- tinuous brake on every occasion for regulating the stoppage of trains. In approaching terminal stations the continuous brake must only be used in cases of emergency, the driver taking care to reduce the speed of his train so that it may be brought to a stand by the hand brake of the engine or tender alone. The brakes are used for every stoppage.	
—	—	2	13	—	—	—		
—	—	3, but have indepen- dent brakes.	Light vans and trucks occasionally run with passenger trains, but these vehicles have only ordinary brakes.	—	—	—		The ordinary regu- lations as to appli- cation of brakes. The brake is used for every stoppage.

NAME OF RAILWAY COMPANY.	Name and Description of Brake or Brakes adopted by the Company, and in use on Passenger Trains on Lines worked by them.	(1.) Whether the Brakes are instantaneous in action, and capable of being applied by engine-driver and guards. (2.) Whether self-acting. (3.) Whether capable of being applied to every vehicle of a train. (4.) Whether in regular use in daily working. (5.) Whether the materials employed are of a durable character, easily maintained, and kept in order.	AMOUNT OF STOCK FITTED WITH			
			Number of Engines and Tenders (used for Passenger Trains) in which the Continuous Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of	
					Passenger Carriages.	Fitted only with Charns or Pipes and Connections for connecting the Brake.
					Fitted with Brake Gear complete.	
SOMERSET AND DORSET JOINT COMMITTEE.	Vacuum automatic -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Some of the materials are durable, others not.	—	37 (including 16 tank engines. all fitted with automatic steam brakes to engine and tender wheels combined with automatic vacuum brake for train.)	104 (4 have connecting pipes for Westinghouse brake.)	—
SOUTH-EASTERN -	Smith's vacuum -	(1.) Nearly instantaneous in action, and capable of being applied by engine-driver only. (2.) Not self-acting. (3.) Yes. (4.) Yes. (5.) Some durable, others not very durable.	58 engines, 40 tenders.	10 engines, 5 tenders.	715	371 also 431 vehicles also fitted with automatic brake.
	Automatic vacuum -	(1.) Instantaneous in action, and capable of being applied by engine-driver only. (2.) Self-acting. (3.) Yes. (4.) Yes. (5.) Some durable, others not very durable.	178 engines, 124 tenders.	10 engines, 5 tenders.	501	*16 besides 44 vehicles also fitted with simple vacuum brake.
SOUTHWOLD - -	No continuous brakes.	—	—	—	—	—
TAFF VALR - -	Smith's automatic vacuum.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes (5.) Yes.	33	—	169	1
TALYLYNN - -	No continuous brakes.	—	—	—	—	—
WEST LANCASHIRE -	Westinghouse automatic continuous.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	9 engines 7 tenders.	—	18	—
WEST SOMERSET MINERAL.	No continuous brakes.	—	—	—	—	—
WREXHAM, MOLD, AND CONNAH'S QUAY.	Clark and Webb's chain.	(1.) Instantaneous in action. Capable of being applied by engine-driver and guard. (2.) Yes. (3.) Yes, to every vehicle so fitted. (4.) Yes. (5.) Yes.	—	—	33	—

* 256 of these are fitted with pipes and connections for simple and automatic vacuum brakes.

CONTINUOUS BRAKES.		AMOUNT OF STOCK NOT FITTED WITH CONTINUOUS BRAKES.		AMOUNT OF STOCK FITTED DURING THE ABOVE SIX MONTHS.				Special Rules under which the Continuous Brakes are worked.
Vehicles.		Number of Engines and Tenders used for Passenger Trains.	Number of Passenger Carriages and other Vehicles used for Passenger Trains.	Number of Engines and Tenders (used for Passenger Trains) in which the Brakes can be applied to the Wheels	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of Passenger Carriages and other Vehicles used for Pas- senger Trains.		
Other Vehicles used for Passenger Trains.	Fitted only with Chains or Pipes and Connections for con- necting the Brake.					Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for con- necting the Brake.	
44	—	—	—	—	7 engines.	—	—	See page 109.
162	277 (besides 15 vehicles fitted with automatic brake.)	2 engines, 1 tender.	30	—	2 engines, 1 tender.	—	—	See page 110.
101	*246 (besides 82 vehicles also fitted with simple vacuum brake.)	—	—	42 engines, 35 tenders.	2 engines, 1 tender.	102	64	—
—	—	2	23	—	—	—	—	—
43	6	—	—	—	—	5	—	Continuous brake to be used at every stoppage, except at terminal stations, upon approaching which the speed of train must be so reduced as to enable driver to pull up with ordinary hand brake only.
—	—	2	5	—	—	—	—	
7	6	3	58	—	—	—	—	
—	—	1	3	—	—	—	—	The brake is used for every stoppage.
2 brake-vans.	—	2	—	—	—	—	—	No special rules necessary, as the chain brake is worked in conjuna- tion with hand brake for ordinary stopping purposes

NAME OF RAILWAY COMPANY.	Name and Description of Brake or Brakes adopted by the Company, and in use on Passenger Trains on Lines worked by them.	(1.) Whether the Brakes are instan- taneous in action, and capable of being applied by engine-driver and guards. (2.) Whether self-acting. (3.) Whether capable of being applied to every vehicle of a train. (4.) Whether in regular use in daily working. (5.) Whether the materials employed are of a durable character, easily maintained, and kept in order.	AMOUNT OF STOCK FITTED WITH			
			Number of Engines and Tenders (used for Passenger Trains) in which the Continuous Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of	
					Passenger Carriages.	
					Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Con- nections for connecting the Brake.
SCOTLAND.						
AYRSHIRE AND WIG- TOWNSHIRE.	Westinghouse	(1.) Can be applied by drivers and guards. (2.) Self-acting. (3.) Capable of being applied to every vehicle of a train. (4.) In regular use in daily working. Used for every stoppage.	4 applied to tender wheels. Steam brake on engine wheels.	—	6	4
	Chain	(1.) Can only be applied by guards. (2.) Not self-acting. (3.) Capable of being applied to every vehicle of a train. (4.) Not in regular daily use. (5.) Durable, easily maintained, &c.	—	—	6	—
CALEDONIAN	Westinghouse auto- matic.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes, so far as the Company's Locomotive Superinten- dent has experience of their working.	251 tender and 24 tank. 11 engines and tenders, brake applicable to wheels of tender only.	22 tank, of which 12 are fitted with brake.	1,179	53
	Vacuum and West- inghouse combined.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes, so far as the Com- pany's Locomotive Superintendent has experience of their working.	—	—	67	2
	Steel McInnes chain	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes, so far as the Company's Locomotive Superinten- dent has experience of their working.	—	—	21	5
GLASGOW AND SOUTH-WESTERN.	Westinghouse auto- matic.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	90 and 4 tank	(Of the foregoing 90 engines and tenders are fitted to work automatic vacuum braked trains.)	320 (31 of these are also fitted with the automatic vacuum brake).	—
	Automatic vacuum	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	35 and 16 tank	—	374	—
GLASGOW, BARR- HEAD, AND KIL- MARNOCK.	No continuous brakes.	—	—	—	—	—
GREAT NORTH OF SCOTLAND.	Westinghouse auto- matic.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	46 and 3 tank	—	166	5
HIGHLAND	Newall's continuous hand.	(1.) Not instantaneous in action, and can only be applied by guard. (2.) No. (3.) No. (4.) Yes. (5.) Yes.	—	—	91	—
	Automatic vacuum	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	57	—	71	150
	Westinghouse Auto- matic Vacuum.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	—	—	16	4

CONTINUOUS BRAKES.		AMOUNT OF STOCK NOT FITTED WITH CONTINUOUS BRAKES.		AMOUNT OF STOCK FITTED DURING THE ABOVE SIX MONTHS.				Special Rules under which the Continuous Brakes are worked.
Vehicles.		Number of Engines and Tenders used for Passenger Trains.	Number of Passenger Carriages and other Vehicles used for Passenger Trains.	Number of Engines and Tenders (used for Passenger Trains) in which the Brakes can be applied to the Wheels.	Number of Engines and Tender (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of Passenger Carriages and other Vehicles used for Pas- senger Trains.		
Other Vehicles used for Passenger Trains.	Fitted only with Chains or Pipes and Connections for connect- ing the Brake.					Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for connect- ing the Brake.	
—	8	3	4	—	—	—	—	Westinghouse Co.'s.
4 and West- inghouse pipe also.	—	—	—	—	—	—	—	—
116 brake-vans, horse-boxes, &c.	674 brake vans, horse-boxes, &c.	2	30	6 engines and tenders.	—	16	17	See page 110.
41	398	—	—	—	—	16	—	—
8	—	—	—	—	—	—	—	—
50 (Of these 12 brake vans are also fitted with the automatic vacuum brake.)	139 horse boxes, fish and other vans are fitted with the Westinghouse and vacuum pipe connexions.	—	35	—	—	—	—	See page 115. No restriction re- garding use of brake except when stopping at terminal stations.
113	—	—	—	5	—	69	—	
—	—	1	2	—	—	—	—	
34	230	9 all of these are tender engines fitted with steam brake attached to 4 coupled wheels of engine.	92	6	—	3	—	See page 116. The brake is used for all stoppages except at terminal stations.
43	—	—	—	—	—	—	—	Brake is used for all stoppages.
45	377	23	—	2	—	41	187	—
6	13	—	—	—	—	—	—	—

NAME OF RAILWAY COMPANY.	Name and Description of Brake or Brakes adopted by the Company, and in use on Passenger Trains on Lines worked by them.	(1.) Whether the Brakes are instan- taneous in action, and capable of being applied by engine-driver and guards. (2.) Whether self-acting. (3.) Whether capable of being applied to every vehicle of a train. (4.) Whether in regular use in daily working. (5.) Whether the materials employed are of a durable character, easily maintained, and kept in order.	AMOUNT OF STOCK FITTED WITH			
			Number of Engines and Tenders (used for Passenger Trains) in which the Continuous Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of	
					Passenger Carriages.	Fitted only with Chains or Pipes and Con- nections for connecting the Brake.
NORTH BRITISH	Westinghouse' auto- matic air.	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	163 53 engines have air brake fitted to wheels of engine and tender. 51 tank engines have air brake fitted to wheels of engine. 59 engines have air brake fitted to wheels of tender only.	52	1,660	8
PORTPATRICK AND WIGTOWNSHIRE JOINT COMMITTEE.	No continuous brakes	—	—	—	—	—
IRELAND.						
BALLYCASTLE	No continuous brakes.	—	—	—	—	—
BELFAST AND COUNTY DOWN.	No continuous brakes.	—	—	—	—	—
BELFAST AND NORTH- ERN COUNTIES.	Vacuum automatic	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	31 engines and 6 goods engines for ordinary and special passenger work if required.	—	135	28
	Smith's vacuum *	(1.) Almost instantaneous; can only be applied by driver. (2.) No. (3.) Yes. (4.) Yes. (5.) Yes.	6	—	10	5
BESSBROOK AND NEWRY.	Continuous brakes not adaptable to electric cars.	—	—	—	—	—
CASTLEBERG AND VICTORIA BRIDGE.	Westinghouse auto- matic.	(1.) Yes. (2.) Yes, when exclusively pas- senger. (3.) Yes. (4.) Yes. (5.) Yes.	2	—	5	—
CAYAN, LEITRIM, AND ROSCOMMON LIGHT.	Automatic vacuum	(1.) Instantaneous; capable of being applied by driver and by guard. (2.) Self-acting. (3.) Every vehicle. (4.) In regular daily use. (5.) Durable and easily maintained.	8	—	12	—
CORK, BANDON, AND SOUTH COAST.	Automatic vacuum	(1.) Yes. (2.) Yes. (3.) and (4.) Not yet working. (5.) Yes.	2	—	4	—
CORK AND MACROOM DIRECT.	No continuous brakes.	—	—	—	—	—
CORK AND MUSKERRY LIGHT.	Automatic vacuum	(1.) Yes. (2.) Yes. (3.) Yes, to all carriages for conveyance of pas- sengers and also to brake vans. (4.) Yes, on all trains. (5.) Yes.	4	4	14	—
CORK, BLACKROCK, AND PASSAGE.	No continuous brakes.	—	—	—	—	—

* Stock taken over with Ballymena and Larne Railway.

CONTINUOUS BRAKES.		AMOUNT OF STOCK NOT FITTED WITH CONTINUOUS BRAKES.		AMOUNT OF STOCK FITTED DURING THE ABOVE SIX MONTHS.				Special Rules under which the Continuous Brakes are worked.
Vehicles.		Number of Engines and Tenders used for Passenger Trains.	Number of Passenger Carriages and other Vehicles used for Passenger Trains.	Number of Engines and Tenders (used for Passenger Trains) in whch the Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of Passenger Carriages and other Vehicles used for Pas- senger Trains.		
Other Vehicles used for Passenger Trains.						Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for con- necting the Brake.	
Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for con- necting the Brake.							
—	468	—	165	13	Brake apparatus taken off 7.	60	—	See page 117.
—	4	6	21	—	—	—	—	—
—	—	3	10	—	—	—	—	—
—	—	20 and 9 tenders.	125	—	—	—	—	—
12	36	9 engines	8	8	—	5, altered from pipes only to brake complete.	1	See page 118. The brake is used for every stoppage except terminal.
—	—	—	—	—	—	—	—	—
—	—	2 electro- motor cars.	1 passenger carriage, 22 goods waggons.	—	—	—	—	—
2 vans	20 goods waggons.	—	—	—	—	—	—	Brakes used for every stoppage.
103 waggons, 2 horse boxes, 6 brake-vans.	3 ballast, 2 timber.	—	—	—	—	—	—	See page 119. Brakes used for every stoppage.
2 vans	—	12	43	2	—	6	—	—
—	—	4 tank engines	13 carriages, 3 brake vans.	—	—	—	—	—
3	—	—	32 goods and coal waggons.	—	—	—	—	See page 119.
—	—	3 tank engines	14	3	—	3	—	—

NAME OF RAILWAY COMPANY.	Name and Description of Brake or Brakes adopted by the Company, and in use on Passenger Trains on Lines worked by them.	(1.) Whether the Brakes are instan- taneous in action, and capable of being applied by engine-driver and guards. (2.) Whether self-acting. (3.) Whether capable of being applied to every vehicle of a train. (4.) Whether in regular use in daily working. (5.) Whether the materials employed are of durable character, easily maintained, and kept in order.	AMOUNT OF STOCK FITTED WITH			
			Number of Engines and Tenders (used for Passenger Trains) in which the Continuous Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of	
					Passenger Carriages.	
					Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Con- nections for connecting the Brake.
DUBLIN, WICKLOW, AND WEXFORD.	Simple vacuum only	(1.) Instantaneous, by driver only. (2.) No. (3.) On all but vehicles fitted with pipes. (4.) Yes. (5.) Yes.	27 tank and 9 tender engines.	10 tender engines.	140 carriages and 18 vans.	34 carriages and 10 vans.
DUNDALK, NEWRY, AND GREENORE.	Automatic vacuum -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	—	—	8	3
FINN VALLEY -	No continuous brakes.	—	—	—	—	—
GREAT NORTHERN -	Smith's simple vacuum	(1.) Yes. Applied by driver. (2.) Not self-acting. (3.) Yes. (4.) Yes. (5.) Yes.	84	—	318	—
	Automatic vacuum -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	6	—	60	—
GREAT SOUTHERN AND WESTERN.	Smith's vacuum -	(1.) By driver. (2.) No. (3.) Yes. (4.) Yes. (5.) Yes.	89 86 goods engines.	—	265	1
	Automatic vacuum -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	1	—	4	—
LONDONDERRY AND LOUGH SWILLY.	No continuous brakes.	—	—	—	—	—
MIDLAND GREAT WESTERN OF IRE- LAND.	Simple vacuum -	(1.) Instantaneous in action. Applied by driver only. (2.) No. (3.) Yes, to all carriages of a train. (4.) Yes. (5.) Yes.	10	—	88	—
	Automatic vacuum -	(1.) Instantaneous in action. Applied by driver and guards. (2.) Yes. (3.) Yes, to all carriages of a train. (4.) Yes. (5.) Yes.	38	—	75	1
SLIGO, LEITRIM, AND NORTHERN COUNT- IES.	Smith's vacuum -	(1.) Fairly so; engine driver only. (2.) No. (3.) Yes, if all piped and coupled. (4.) Yes. (5.) Yes.	5	—	15	—
WATERFORD AND CENTRAL IRELAND.	No continuous brakes.	—	—	—	—	—
WATERFORD AND LIMERICK.	Automatic vacuum -	See copy Rules	9	—	7	—
WATERFORD AND TRAMORE.	No continuous brakes.	—	—	—	—	—
WATERFORD, DUN- GARVAN, AND LIS- MORE.	Smith's vacuum -	—	1 tank.	—	—	—
WEST CARBERRY -	No continuous brakes	—	—	—	—	—
WEST CLARE -	Automatic vacuum -	(1.) Yes. (2.) Yes. (3.) Yes. (4.) Yes. (5.) Yes.	4 tank.	—	9	—
WEST DUNIGAL -	No continuous brakes.	—	—	—	—	—
* TOTAL FOR THE UNITED KINGDOM			5,151	4,746	36,039	1,378

* NOTE - These totals are the numbers of engines and carriages returned by the railway companies as fitted with continuous brakes. It will be observed, however, that some of the brakes so returned but very imperfectly fulfil that designation.

CONTINUOUS BRAKES.		AMOUNT OF STOCK NOT FITTED WITH CONTINUOUS BRAKES.		AMOUNT OF STOCK FITTED DURING THE ABOVE SIX MONTHS.				Special Rules under which the Continuous Brakes are worked.
Vehicles.		Number of Engines and Tenders used for Passenger Trains.	Number of Passenger Carriages and other Vehicles used for Passenger Trains.	Number of Engines and Tenders (used for Passenger Trains) in which the Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of Passenger Carriages and other Vehicles used for Pas- senger Trains.		
Other Vehicles-used for Passenger Trains.						Fitted with Brake Gear complete.	Fitted only with Chains or Pipes and Connections for con- necting the Brake.	
—	15 horse boxes and 2 perish- able goods waggon.	3 tank and 2 tender engines.	12 carriages and 5 carriage trucks.	—	—	4 carriages	—	Used for every stop except terminal stations.
—	—	5 Tank engines fitted with reversing screws and hand brakes.	14	—	—	4	—	—
—	—	1	5	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	107	—	—	6	—	60	14 other vehicles.	—
168	85	—	—	—	—	—	—	Brake used for all stops except terminal stations. See page 119.
2	—	—	—	—	—	—	—	—
—	—	6	26	—	—	—	—	—
18 brake vans.	—	—	22 carriage trucks.	—	—	—	—	See page 120.
84	112 horse boxes, &c.	—	—	—	—	—	—	—
1 horse box	—	—	—	—	—	—	—	Used for every stoppage.
—	—	13	45	—	—	—	—	—
3 vans	16 waggon	18	118	1	—	1 carriage, 1 van.	—	See page 121.
—	—	4	16	—	—	—	—	—
—	—	4	21	—	—	—	—	—
—	—	4	4	—	—	—	—	—
57	—	—	—	—	—	—	—	—
—	—	3	11	—	—	—	—	—
8,110	6,266	410	2,263	258	352	2,260	333	

EXTRACT from the FOREGOING RETURN showing the NUMBER of ENGINES, PASSENGER and other VEHICLES used for PASSENGER TRAINS which were fitted with TWO or MORE descriptions of CONTINUOUS BRAKES to provide for running Through Trains, and for interchange of Traffic.

NAME OF RAILWAY COMPANY.	Name of Brakes fitted to the Stock enumerated in Columns 4 to 7.		AMOUNT OF STOCK FITTED WITH BRAKES IN - DUPLICATE.			
			Engines fitted complete.	Engines fitted with Apparatus for working the Brake.	Vehicles fitted complete.	Vehicles fitted with Pipes and Connections only.
(1.)	(2.)	(3.)	(4.)	(5.)	(6.)	(7.)
EASTERN AND MIDLANDS -	Westinghouse automatic "	Vacuum - - -	—	4	1	22
		Automatic vacuum -	—	4	—	—
		Clarke's chain - -	—	—	24	—
GREAT EASTERN - - -	Westinghouse automatic	Vacuum - - -	—	7	—	373
GREAT NORTHERN - - -	Vacuum automatic -	Westinghouse - -	—	—	200	632
HULL, BARNSELY, AND WEST RIDING JUNCTION.	Westinghouse automatic	Automatic vacuum -	—	—	—	90
LANCASHIRE AND YORKSHIRE	Vacuum automatic -	Westinghouse - -	—	—	2	42
LONDON AND NORTH- WESTERN.	Automatic vacuum -	Simple vacuum - -	—	1,162	—	—
	Automatic vacuum -	Westinghouse - -	—	—	576	—
	Simple vacuum - -	Westinghouse - -	—	—	3	—
NORTH-EASTERN - - -	Westinghouse automatic	Automatic vacuum -	6	—	84	540
	Westinghouse (pipes only).	Automatic vacuum -	—	—	—	676
SOMERSET AND DORSET -	Automatic vacuum -	Westinghouse - -	—	—	—	4
SOUTH-EASTERN - - -	Automatic vacuum -	Smith's vacuum -	10	—	—	446
	Automatic vacuum (pipes and connec- tions only).	Smith's vacuum -	—	—	126	256
AYRESHIRE AND WIGTOWN- SHIRE.	Chain - - - -	Westinghouse - -	—	—	—	4
CALEDONIAN - - - -	Westinghouse automatic	Vacuum - - - -	—	—	108	400
GLASGOW AND SOUTH- WESTERN.	Westinghouse automatic	Automatic vacuum -	—	90	43	—
	Westinghouse (pipes only).	Automatic vacuum -	—	—	—	139
HIGHLAND - - - -	Westinghouse - -	Automatic vacuum -	—	—	22	17
		TOTAL - - -	16	1,267	1,189	3,641

No. 2.

RETURN for Six Months ending on the 30th day of June 1890, of all CASES in which CONTINUOUS BRAKES have failed to act when required to be brought into Action, or have caused delay in the working of trains on Railways.

No. 2.

RETURN for Six Months ending on the 30th day of June 1890, of all CASES in which CONTINUOUS BRAKES have failed to act when required to be brought into Action, or have caused delay in the working of trains on Railways.

1.	2.	3.	4.	5.
Name of Railway Company.	Name or Description of Brake which failed or caused delay in any of the instances asked for in Column 4.	Date of Failure.	Instances under the three following heads separately, of :— 1. Failure or partial failure to act when required in case of an accident to a train, or a collision between trains being imminent. 2. Failure or partial failure to act under ordinary circumstances to stop a train when required. 3. Delay in the working of trains in consequence of defects in, or improper action of, the Brakes, distinguishing whether they arose from neglect or inexperience of servants, or failure of machinery or material.	Number of Miles run by Trains fitted with each description of Continuous Brake.
ENGLAND AND WALES.				
Aylesbury and Buckingham.	—	No failures reported.	—	Automatic Vacuum Brake. 11,160 miles.
Barry Dock and Railways Company.	—	No failures reported.	—	Automatic Vacuum Brake. 23,353 miles.
Bishop's Castle	—	No failures reported.	—	Webb's Chain Brake. 11,815 miles.
Brecon and Merthyr	—	No failures reported.	—	Fay's Hand Brake. 77,177 miles.
Cambrian	—	No failures reported.	—	Vacuum Brake. 127,616 miles.
Cheshire Lines Committee.	Automatic Vacuum.		1 and 2. Nil. 3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i> Jan. 6 8.55 a.m. Southport to Manchester. 2 minutes lost in running, owing to ejector steam pipe blowing. Nut had split; due to ordinary wear and tear. " 7 7.28 a.m. Manchester to Chester. 4 minutes delay in starting. Driver had a little difficulty with the brake owing to gland on piston rod of van No. 146 having become reduced through ordinary wear and tear. March 7 8.0 p.m. Wigan to Manchester. 2 minutes lost in running. Leakage in train pipe, supposed to be due to connexions being disturbed by some one passing between the vehicles, doubling one of the washers up, and thus admitting air. May 23 4.40 p.m. Liverpool to Godley. Piston on tender of engine No. 440 had stuck owing to rolling ring twisting. 2 minutes delay at Halewood releasing piston.	845,752 miles.

1. Name of Railway Company.	2. Name or Descrip- tion of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
Cheshire Lines Com- mittee— <i>cont.</i>	Automatic Va- cuum— <i>cont.</i>	May 28	3.0 p.m. Manchester to Liverpool. Brake applied itself between Otterspool and St. Michaels, causing 5 minutes delay. Drip-valve casting broken by some hard substance striking it, probably a stone rebounding after being struck by engine wheels. Engine No. 318.	
		June 28	6.10 a.m. special Chester to Mouldsworth. 5 minutes late start. One of the carriages had to be detached owing to the piston rod gland being defective; due to ordinary wear and tear. No. of vehicle not taken.	
Colne Valley and Halstead.	—	No failures reported.	—	Westinghouse Automatic Brake 14,000 miles.
East and West Junc- tion.	—	No failures reported.	—	Westinghouse Automatic Brake. 50,414 miles.
Eastern and Midlands	—	No failures reported.	—	Westinghouse Automatic Brake. 134,480½ miles.
Furness - -	—	No failures reported.	—	Smith's Vacuum Automatic. 211,448 miles.
	—	No failures reported.	—	Newall's Patent Brake. 31,840 miles.
Great Eastern -	Westinghouse Brake. (447 engines fitted. See Return No. 1, page 10.)	Jan. 4	1. Nil. 2. <i>Failure or partial failure to act under ordinary circumstances to stop a train when required.</i> Carriage train ex Billericay overran Shenfield platform 17 carriage lengths, caused by main stop-cock on brake-van No. 446 being closed. 3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i>	4,980,944 miles.
		" 4	Flexible pipe burst on brake-van No. 407, at Harold Wood.	
		" 6	Flexible pipe burst on T.C.C. No. 729, near Colchester.	
		" 7	Flexible pipe burst on brake-van No. 522, near Spooner Row.	
		" 8	Flexible pipe burst on T.C.C. No. 377, at Norwich.	
		" 8	Collar broke off main pipe leading from pump to reservoir on engine No. 726, between Chelmsford and Hatfield Peverel.	
		" 11	Flexible pipe burst on C.C. No. 48, near Dovercourt.	
		" 11	Flexible pipe burst on tender No. 717, near N. Hall.	
		" 14	Flexible pipe burst on T.C.C. No. 814, near Swaffham.	
		" 15	Flexible pipe burst on carriage truck No. 113, between March and Whittlesea.	
		" 15	Union nut slacked back on main pipe leading from pump to reservoir on engine No. 0386, near Bishop's Stortford.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
Great Eastern—cont. -	Westinghouse Brake—cont.	Jan. 15	Flexible pipe burst on T.C.C. No. 104, near London Fields.	
		" 16	Flexible pipe burst on T.C.C. No. 761, at Marks Tey.	
		" 17	Flexible pipe burst on Great Northern Railway horse-box No. 1157, near Whittlesea.	
		" 17	Flexible pipe burst on horse-box No. 53, at Devonshire Street.	
		" 18	Flexible pipe burst on C.C. No. 332, near Enfield.	
		" 22	Flexible pipe burst between engine and tender No. 0291, at Wendling.	
		" 23	Flexible pipe burst on horse-box No. 84, at Romford Factory.	
		" 23	Collar broke off main pipe on engine No. 757, at Manningtree.	
		" 23	Flexible pipe burst on T.C.C. No. 499, at Stoke Newington.	
		" 23	Flexible pipe burst on tender No. 305, near Witham.	
		" 26	Flexible pipe burst on T.C.C. No. 625, at Bethnal Green.	
		" 28	Flexible pipe burst on T.C.C. No. 591, near Cantley.	
		" 31	Flexible pipe burst on F.C.C. No. 108, between Stratford and Leyton.	
		Feb. 4	Flexible pipe burst on brake-van No. 211, at Bishopsgate.	
		" 5	Flexible pipe burst on T.C.C. No. 853, at Liverpool Street.	
		" 5	Collar broke off pipe leading from pump to main reservoir on engine No. 720, at Ponders End.	
		" 6	Flexible pipe burst on tender No. 727, at Witham.	
		" 7	Flexible pipe burst on London and North-Western Railway horse-box No. 49,476, at Manor Park.	
		" 8	Union nut on main reservoir slacked back on engine No. 720, at Ware.	
		" 13	Flexible pipe burst on Great Northern Railway horse-box No. 1178, at Soham.	
		" 14	Union nut on main reservoir slacked back on engine No. 53, between Forest Gate and Maryland Point.	
		" 17	Flexible pipe burst on brake-van No. 121, near Brampton.	
		" 17	Flexible pipe burst on fish-truck No. 34, near Brandon.	
		" 21	Flexible pipe burst on brake-van No. 265, at Seven Sisters.	
		" 22	Flexible pipe burst on fish-truck No. 26, at Woodbridge.	
		" 22	Flexible pipe burst on T.C.C. No. 473, at East London Junction.	
		March 5	Flexible pipe burst on T.C.C. No. 853, at Liverpool Street.	
		" 5	Flexible pipe burst on T.C.C. No. 759, at Black Drove.	
		" 7	Flexible pipe burst on Great Northern Railway horse-box No. 1155, near Wrabness.	
		" 8	Flexible pipe burst on S.C.C. No. 423, at Bow Junction.	
		" 8	Union nut slacked back on pipe leading from pump to reservoir on engine No. 52, between Saxham and Bury.	
		" 10	Flexible pipe burst on S.C.C. No. 191, near Hilgay Fen.	
		" 13	Flexible pipe burst on carriage truck No. 2, near Needham.	
		" 13	Collar broke off pipe leading from pump to reservoir on engine No. 571, near Harold Wood.	

1. Name of Railway Company.	2. Name or Descrip- tion of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
Great Eastern— <i>cont.</i> -	Westinghouse Brake— <i>cont.</i>	March 17	Flexible pipe burst on T.C.C. No. 446, at Norwich.	
		" 17	Flexible pipe burst on T.C.C. No. 426, near Trowse.	
		" 17	Flexible pipe burst on horse-box No. 239, near Long Stanton.	
		" 18	Flexible pipe burst on carriage truck No. 29, at March.	
		" 21	Flexible pipe burst on carriage truck No. 139, at Chatteris.	
		" 24	Flexible pipe burst on horse-box No. 1, at Thetford.	
		" 24	Flexible pipe burst on T.C.C. No. 328, at Audley End.	
		" 30	Flexible pipe burst on fish-truck No. 28, at Wymondham.	
		April 5	Flexible pipe burst on F.C.C. No. 360, near Soham.	
		" 5	Union nut slacked back on main pipe on engine No. 753, on Brentwood bank.	
		" 7	Flexible pipe burst on S.C.C. No. 314, near Woodford.	
		" 15	Flexible pipe burst on horse-box No. 251, near King's Dyke.	
		" 16	Flexible pipe burst on T.C.C. No. 192, at Rectory Road.	
		" 17	Flexible pipe burst on S.C.C. No. 451, at Bethnal Green.	
		" 17	Flexible pipe burst on horse-box No. 15, near March.	
		" 18	Flexible pipe burst on C.C. No. 366, at Whitlingham.	
		" 23	Flexible pipe burst on F.C.C. No. 198, near Connaught Road.	
		" 24	Union nut slacked back on pipe leading from pump to reservoir on engine No. 739 at Belstead box.	
		" 27	Flexible pipe burst on T.C.C. No. 221, at Stamford Hill.	
		" 28	Flexible pipe burst on S.C.C. No. 434, near Stoke Newington.	
		" 30	Flexible pipe burst on brake-van No. 384, near Cawston.	
		" 30	Flexible pipe burst on brake-van No. 305, near Ponders End.	
		May 1	Flexible pipe burst on horse-box No. 132, near Kelvedon.	
		" 1	Flexible pipe burst on C.C. No. 356, near Harling.	
		" 2	Flexible pipe burst on Great Northern Railway horse-box No. 1348, near Whittlesea.	
		" 2	Flexible pipe burst on carriage truck No. 97, at Roydon.	
		" 5	Flexible pipe burst on fish-truck No. 71, near Lowestoft.	
		" 6	Collar broke off pipe leading from pump to reservoir on engine No. 676 at Fenchurch Street.	
		" 6	Collar broke off pipe leading from pump to reservoir on engine No. 717, near Manea.	
		" 8	Flexible pipe burst on T.C.C. No. 206, at Clapton.	
		" 8	Flexible pipe burst on fish-truck No. 58, at Spooner Row.	
		" 12	Flexible pipe burst on F.C.C. No. 324, near Cantley.	
		" 14	Flexible pipe burst on C.C. No. 132, at Rectory Road.	
		" 23	Flexible pipe burst on T.C.C. No. 511, at Stratford Market.	
		" 24	Flexible pipe burst on C.C. No. 121, at Mill Road.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
Great Eastern— <i>cont.</i> -	Westinghouse Brake— <i>cont.</i>	May 24	Flexible pipe burst on E. and M.R. horse-box No. 35, near Littleport.	
		" 24	Flexible pipe burst on L. and N.W.R. horse box No. 256, near March.	
		" 35	Flexible pipe burst on S.C.C. No. 295, at Wood Street.	
		" 25	Flexible pipe burst on engine No. 575.	
		" 27	Collar broke off pipe leading from pump to reservoir on engine No. 563, at Shepreth Junction.	
		" 29	Flexible pipe burst on T.C.C. No. 781, near Clacton.	
		June 2	Collar broke off pipe leading from pump to reservoir on engine No. 563, near Coldham.	
		" 3	Flexible pipe burst on fish-truck No. 21, near Whittlesea.	
		" 5	Flexible pipe burst on T.C.C. No. 427, at Connaught Road.	
		" 11	Collar broke off pipe leading from pump to reservoir on engine No. 714, near Donnington Road.	
		" 19	Flexible pipe burst on T.C.C. No. 380, at Rye House.	
		" 21	Flexible pipe burst on S.C.C. No. 199, at Southend.	
		" 23	Flexible pipe burst on S.C.C. No. 187, at Stratford.	
		" 23	Flexible pipe burst on T.C.C. No. 922, at Witham.	
		" 24	Flexible pipe burst on F.C.C. No. 118, near Brockley.	
		" 27	Flexible pipe burst on compo. carriage No. 115, near Geldeston.	
		" 28	Flexible pipe burst on cattle truck No. 16, near Bramford.	
		" 28	Flexible pipe burst on brake-van No. 198, near Kelvedon.	
	—	No failures reported.	—	Vacuum Brake. 951 miles.
Great Northern -	The Automatic Vacuum. (514 engines fitted. See Return No. 1, p. 12.)		1 and 2. Nil.	4,457,328 miles.
			3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i>	
		Jan. 1	Two minutes delay at Enfield to up train No. 589, owing to coupling pipe of engine No. 249 being frozen. Had to be thawed.	
		" 2	Seven minutes delay at Retford to up train No. 522, owing to drip valves of engine No. 286 being frozen. From neglect.	
		" 2	Two minutes delay at Holbeck to train No. 128/2, owing to coupling pipe of carriage brake No. 1069 not being properly placed on stud.	
		" 2	Eight minutes delay at Ardsley to train No. 85/1, owing to connecting pipe of engine No. 584 being frozen on stud.	
		" 3	Two minutes delay at Ardsley to train No. 85/1, owing to coupling pipe of engine No. 584 being frozen on stud.	
		" 8	Three minutes delay at Fletton to up train No. 279, second part, owing to application valve of carriage brake No. 1033 not being tight.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Train fitted with Continuous Brake.
Great Northern— <i>cont.</i>	The Automatic Vacuum — <i>cont.</i>	Jan. 11	Two minutes delay at Grantham to down train No. 100. Pipes of carriage brake No. 882 and horse-box No. 1347 would not uncouple through nibs being bruised.	
		" 13	Two minutes delay at Grantham to down train No. 287, owing to release wire of luggage brake No. 1049 being detached. Had to get under vehicle to the valve.	
		" 13	Three minutes delay at Grantham to up train No. 746, owing to connecting pipe of meat truck No. 15,363 breaking. Through defect.	
		" 13	Two minutes delay at Grantham to down train No. 530, owing to wheels skidding of third brake No. 941 as train was starting, and it had to be stopped and brake released.	
		" 16	Four minutes delay at Doncaster to up train No. 392, owing to connecting pipe of carriage truck No. 2253 breaking.	
		" 18	Three minutes delay at Haxey to up loop train No. 21, owing to smoke-box ashes in large ejector valve of engine No. 51 causing it to stick.	
		" 20	Four minutes delay at Theddlethorpe to up train No. 2, owing to piston of composite No. 218 sticking. Wear and tear.	
		" 20	Three minutes delay from Ardsley to Bradford to train No. 96/3, owing to piston of carriage No. 1547 sticking.	
		" 21	Three minutes delay at Nottingham to up Nottingham train No. 24, owing to washer of clap valve of engine No. 88 giving way.	
		" 24	Four minutes delay at Spalding to down loop train No. 26, owing to piston rod of third-class carriage No. 1601 being bent.	
		" 27	Eleven minutes delay at York Road to up train No. 198, owing to leading vacuum pipe of engine No. 698 being broken.	
		Feb. 6	Two minutes delay at Ardsley to train No. 85/1, owing to connecting pipe of engine No. 518 not being properly placed on plug.	
		" 6	Three minutes delay at Ingrow to train No. 104/6, owing to piston of engine No. 504 sticking.	
		" 7	Two minutes delay at Hatfield to up train No. 119, owing to defective gland washer on composite No. 1812.	
		" 8	Five minutes delay at Low Town to train No. 49/6, owing to piston of engine No. 631 sticking.	
		" 8	Three minutes delay at Doncaster to down train No. 450, owing to pipe on N.E. fish truck No. 20,168 being defective.	
		" 10	Three minutes delay at Doncaster to down train No. 271, owing to india rubber washer of third brake No. 570 being missing. Careless coupling.	
		" 10	Three minutes delay at Bradford to train No. 46/4, owing to piston of third brake No. 1276 sticking.	
		" 15	Seven minutes delay at Spalding to down loop train No. 5, owing to brake cylinder of tender No. 39 getting out of position by bolts slacking back.	
		" 16	Five minutes delay at Retford to up train No. 118, owing to hole in miniature sack of third-class carriage No. 2042.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
Great Northern-- <i>cont.</i>	The Automatic Vacuum— <i>cont.</i>	Feb. 20	One minute delay at Westgate to train No. 263/1, owing to connecting pipes not coupling on carriages.	
		" 22	Seven minutes delay at Balne Lane to train No. 203/1, owing to washer of horse-box No. 1237 missing.	
		" 22	Five minutes delay at King's Cross Suburban to down train No. 315, owing to piece of dirt causing drip valve to stick on engine No. 655.	
		" 28	Six minutes delay at Grantham to down special train No. 32, owing to coupling pipes of engine No. 288 being frozen on plug.	
		March 1	Two minutes delay at Aslockton to down train No. 27, owing to connecting pipe of carriage truck No. 1115 not fitting on plug, being blocked with snow.	
		" 1	Four minutes delay at Melton to train No. 105/80, owing to connecting pipe of horse-box No. 1230 not being placed on plug properly.	
		" 2	Eighteen minutes delay at Flush Dyke to train No. 17/3, owing to piston of carriage No. 2376 sticking.	
		" 3	Ten minutes delay at Boston to down Boston train No. 3, owing to drip valves of engine No. 288 being frozen. Neglect.	
		" 3	Two minutes delay at Hatfield to up train No. 181, owing to connecting pipe of carriage truck No. 1126 not being properly fixed on plug.	
		" 3	Seventeen minutes delay at Flush Dyke to train No. 17/3, owing to piston of carriage No. 2376 sticking.	
		" 3	Three minutes delay at Kirkgate to train No. 155/3, owing to piston of carriage brake No. 517 sticking.	
		" 3	Nine minutes delay at Bounds Green to up train No. 609, owing to coupling pipe of brake being frozen on plug.	
		" 3	Two minutes delay at King's Cross to down train No. 170, owing to coupling pipe of carriage truck No. 2257 not fitting on plug through frost.	
		" 3	Twelve minutes delay at Meldreth to up C.B. train No. 2, owing to drip valve of engine No. 258 being frozen. Neglect.	
		" 3	Five minutes delay at Royston to up C.B. train No. 22, owing to drip valve of engine No. 240A being frozen. Neglect.	
		" 5	Eleven minutes delay between twentieth mile and Hatfield to up train No. 273, owing to gland washer of third-class brake No. 670 being hard.	
		" 11	Eight minutes delay at Grantham to down train No. 14, owing to piston of luggage brake-van No. 1731 sticking through rust.	
		" 12	Two minutes delay between Breadsall and Kimberley to up train No. 123, owing to piston gland washer of engine No. 78 failing.	
		" 13	Four minutes delay at Baldock to down C.B. train No. 18, owing to piston of brake sticking.	
		" 14	Fourteen minutes delay from Hatfield to King's Cross to up train No. 218, owing to leakage in union joint of carriage brake No. 2260 and second-class carriage No. 2149.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
Great Northern— <i>cont.</i>	The Automatic Vacuum— <i>cont.</i>	March 14	Three minutes delay at King's Cross Suburban to down train No. 315, owing to gland washer of second-class carriage No. 2151 and third-class carriage No. 2141 being hard, causing leakage.	
		" 15	Twenty-seven minutes delay between Batley and Kirkgate to special train No. 21, owing to pistons of carriages Nos. 114, 1631, and 1466 sticking.	
		" 21	Three minutes delay at Wortley West to train No. 172/6, owing to connecting pipe of carriage No. 71 not being placed properly on plug.	
		" 23	Four minutes delay at Peterboro' to up train No. 744, owing to connections of N.E. fish truck No. 13,911 having to be struck with a hammer and they broke in consequence.	
		" 27	Four minutes delay between Clayton and Keighley to train No. 236/5, owing to piston of carriage No. 371 sticking.	
		April 1	Eleven minutes delay at Wrenthorpe to train No. 75/1, owing to piston of carriage brake No. 664 sticking.	
		" 2	Five minutes delay at Grantham to down Boston train No. 3, owing to rolling-ring of engine No. 715 being displaced and cut.	
		" 2	Six minutes delay at Hare Park to train No. 139/2, owing to piston of carriage No. 858 sticking.	
		" 3	Eight minutes delay at Ingrow to train No. 12/6, owing to branch pipe from main train pipe and cylinder of composite No. 365 being broken.	
		" 9	Five minutes delay at York to up train No. 90, owing to coupling pipe of third-class carriage No. 139 being defective.	
		" 9	Three minutes delay at Grantham to down Boston train No. 28, owing to coupling pipe of composite No. 32 not being properly placed on plug.	
		" 10	Three minutes delay between Hitchin and King's Cross to up train No. 119, owing to piston of composite No. 1936 being bent.	
		" 12	Three minutes delay at Holbeck to train No. 65/5, owing to coupling pipe of brake not being placed properly on plug.	
		" 14	Nine minutes delay at Nottingham to down train No. 70, owing to small ejector valve of engine No. 536 being fast.	
		" 21	Two minutes delay at Bradford to train No. 109/6, owing to coupling pipes of carriages becoming uncoupled by someone stepping between the vehicles.	
		" 26	Two minutes delay at Peterboro' to down train No. 431, owing to india-rubber packing of piston of carriage-brake No. 1936 being defective.	
		" 28	Three minutes delay at Kirkstead to down train No. 56, owing to coupling pipe of carriage not being properly placed on plug.	
		" 29	Twenty-two minutes delay between Moor-gate and Muswell Hill to down train No. 305, owing to rim of sack of carriage-brake No. 815 being defective.	
		" 29	Two minutes delay between Muswell Hill and Finsbury Park to up train No. 286, owing to rim of sack of carriage-brake No. 815 being defective.	

1. Name of Railway Company.	2. Name or Descrip- tion of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
Great Northern— <i>cont.</i>	The Automatic Vacuum— <i>cont.</i>	May 3	Three minutes delay between Drighlington and Kirkgate, to train No. 80/4, owing to leakage between face and cover of combination ejector of engine No. 765.	
		" 5	Three minutes delay at Peterboro' to up train No. 308, owing to india-rubber washer of L.B. van No. 977 being lost.	
		" 13	Five minutes delay at Bradford to train No. 107/6, owing to coupling-pipe of third-class carriage No. 783 being damaged by shunter when coupling.	
		" 26	Seven minutes delay at Doncaster to special train No. 219, owing to piston rod of first-class carriage No. 37 being bent.	
		" 27	Seven minutes delay at King's Cross to down excursion train No. 302, owing to piston rod of third-class carriage No. 1885 sticking.	
		" 27	Five minutes delay at Doncaster to excursion train No. 354, owing to diaphragm of composite No. 28 being defective.	
		June 3	Two minutes delay at Hatfield to down train No. 25, owing to socket attached to bottom side of cylinder of composite No. 2325 being defective.	
		" 7	Seven minutes delay at King's Cross to down train No. 597, owing to coupling pipe of brake-van No. 1013 being broken, probably by someone putting their foot on it.	
		" 9	Two minutes delay at St. Dunstons to train No. 164/4, owing to piston of composite sticking.	
		" 17	Two minutes delay at Tutbury to up train No. 142, owing to coupling pipes of N. S. milk vans Nos. 311 and 1697 being out of order.	
		" 19	Three minutes delay at Peterboro' to up train No. 744, owing to washer of N. E. fish truck No. 4592 being lost.	
		" 19	Four minutes delay at Boston to down train No. 30, owing to small ejector pipe under foot-plate on engine No. 61 being broken.	
		" 26	Eight minutes delay at Langley to down train No. 636, owing to short flexible tube leading from train pipe and release valve of third-class carriage No. 921 having been struck by something.	
		" 26	Eight minutes delay at Sandy to down train No. 286, owing to piston of third-class carriage No. 1863 sticking.	
Great Western	Automatic Vacuum Brake (Sanders and Bolitho's). (1,565 engines fitted. See Return No. 1, page 12.)		1. Nil.	7,818,200 miles.
			2. <i>Failure or partial failure to act under ordinary circumstances to stop a train when required.</i>	
		May. 2	Two minutes delay at Bath, over-ran platform half the length of train, owing to nut of spindle of brake-valve on foot-plate of engine 584 slacking back, so that the engineman could not apply the brake.	

1. Name of Railway Company.	2. Name or Descrip- tion of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
Great Western— <i>cont.</i>	Automatic Vacuum Brake (Sanders and Blitho's) — <i>cont.</i>		3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i>	
		Jan. 2	Two minutes delay at Hereford, owing to weighted valves leaking of West Coast tri-compo. 24, and London and North-Western compo. 760.	
		" 3	Two minutes delay at Oxford, owing to release-valve of passenger van 684 sticking up.	
		" 9	Two minutes delay at Carmarthen junction, owing to flexible hose-pipe of carriage truck 289 being defective.	
		" 9	Two minutes delay at Carmarthen junction owing to top cylinder cover of carriage truck 349 breaking.	
		" 10	Three minutes delay at Carmarthen junction, owing to top cylinder cover of poultry van 659 breaking.	
		" 21	Four minutes delay running between Marshfield and Newport, owing to release valve of milk van 655 sticking up.	
		" 22	Two minutes delay at Johnston and three minutes at Clarboston Road, owing to release-valve of poultry van 319 sticking up.	
		" 24	Three minutes delay at King's Cross, owing to ejector check-valve of engine 1401 breaking.	
		Feb. 7	Two minutes delay at High Wycombe, owing to flexible hose-pipe of milk truck 436 breaking.	
		" 8	Three minutes delay at Kemble, owing to release-valve of third-class 1730 sticking up.	
		" 12	Ten minutes delay running between Paddington and Bristol, owing to piece of cotton waste getting under ejector-check valve of engine 2217, preventing it from closing.	
		" 13	Three minutes delay at Swindon, owing to air-pipe of engine "Prometheus" breaking.	
		" 16	Two minutes delay at Westbourne Park, owing to air-valve on pump of engine "Courier" being out of order.	
		" 17	Two minutes delay at Priestfield, owing to release-valve of compo. 125 sticking up.	
		" 17	Three minutes delay at Reading, owing to ejector of engine 164 only getting 22-inch vacuum, and consequently engineman had difficulty in releasing the brake.	
		" 20	Slight delay at Shrewsbury, owing to cylinder of passenger brake-van 687 breaking.	
		March 4	Five minutes delay running between Trowbridge and Frome, owing to temporary leakage, probably caused by pipes not being properly coupled.	
		" 7	Five minutes delay running between Paddington and Reading, owing to release-valve of milk van 440 sticking up.	
		" 7	Twenty minutes delay running between Ludlow and Salop, owing to brake piston band coming off London and North-Western Company's brake-van 95, causing brake to go on.	

1. Name of Railway Company.	2. Name or Descrip- tion of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
Great Western—cont.	Automatic Vacuum Brake (Sanders and Bolitho's) —cont.	March 15	Three minutes delay running between Ruscombe and Waltham sidings, owing to branch pipe leading to pump on engine 1128 breaking.	
		" 17	Two minutes delay at Hockley, owing to gland-studs of milk van 322 breaking.	
		" 19	Nine minutes delay running between Tiddington and Thame, owing to release-valve of milk van 517 sticking up.	
		" 24	Eleven minutes delay at Landore, owing to cylinder of third-class 610 breaking.	
		April 1	Five minutes delay at Yetminster, owing to temporary leakage, causing brake to be applied. Cause could not be ascertained.	
		" 2	Seven minutes delay at Cowley Bridge, Exeter, owing to flexible hose-pipe of horse-box 204 being defective.	
		" 15	Eleven minutes delay running between Stourbridge and Dudley, owing to union-nut of branch pipe of brake-van 753 working off.	
		" 17	Two minutes delay at Gobowen, owing to cylinder cover of horse-box 585 breaking.	
		" 18	Two minutes delay at Brinscombe, owing to brake not releasing. Cause could not be ascertained, but probably one of the release-valves stuck up.	
		" 24	Eleven minutes delay at Newport, owing to cylinder cover of tri-compo. 436 breaking.	
		" 26	Six minutes delay at Carmarthen junction, owing to cylinder cover of poultry van 955 breaking.	
		" 26	Nine minutes delay at Shrewsbury, owing to brake piston sticking of passenger van 766, through piston band buckling. Delay taking off van.	
		" 27	Two minutes delay at Newport, owing to cylinder cover of milk van 951 breaking.	
		May 7	Slight delay running between Gloucester and Swindon, owing to cylinder cover of milk van 521 breaking.	
		" 8	Seven minutes delay running between Bridgwater and Bristol, owing to stop-plug of carriage truck 50 working down, allowing air to pass into train pipe.	
		" 8	Seven minutes delay running between Reading and Paddington, owing to brake blocks binding on wheels of engine 384. On examination at Paddington a pocket handkerchief was found under the ejector check-valve.	
		" 8	Eight minutes delay running between Hereford and Pontypool Road, owing to piston band of passenger brake-van 769 buckling.	
		" 10	Five minutes delay at Hereford, owing to nuts on spindle of reducing valve of engine 185 slacking back.	
		" 15	Thirteen minutes delay at Chippenham, owing to india-rubber gland buckling and jamming on piston rod of third-class 586, preventing cylinder from falling.	
		" 19	Eight minutes delay at Oxford, owing to cylinder cover of third-class 1 breaking.	
		" 21	Three minutes delay running between Banbury and King's Sutton, owing to piston-gland of third-class 899 being defective.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
Hull, Barnsley, and West Riding Junction Railway and Dock Company— <i>cont.</i>	Westinghouse Automatic Brake— <i>cont.</i>	April 4 " 20 No failures reported.	Westinghouse brake of Hull and Barnsley composite carriage No. 10 failed to release itself at Willerby. No. 10 down passenger. Westinghouse connecting pipe burst of Hull and Barnsley third-class No. 3 on No. 3 up passenger.	Automatic Vacuum Brake. 1,488 miles.
Isle of Wight Central	—	No failures reported.	—	Clark's Chain Brake. 28,751 miles.
Lancashire and York- shire.	Automatic Vacuum Brake. (690 engines fitted. See Return No. 1, page 12.)	Jan. 10 " 15 " 18 Feb. 5 " 5 " 20 March 3 " 3 " 6 " 7 " 25	1 and 2. Nil. 3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i> The 5.15 p.m. train, Blackpool to Manchester, delayed at Moses Gate owing to diaphragm under No. 240 composite being defective through ordinary wear and tear. The 5.15 a.m. Rochdale to Middleton junction was delayed at New Hey owing to the small ejector lead washer working off the valve on engine No. 623. Delay, 3 minutes. The 1.0 p.m. Wigan to Victoria was delayed at Wigan, owing to the vacuum piston sticking on engine No. 646. Delay, 15 minutes. The 7.25 a.m. (Victoria) Manchester to Radcliffe was delayed owing to the vacuum piston on engine No. 853 sticking, caused by the rings being twisted. Delay, 37 minutes. The 6.30 p.m. Bradford to Halifax was delayed on the journey owing to the tender vacuum piston of engine No. 897 sticking. Delay, 10 minutes. The 11.30 a.m. Preston to Liverpool was delayed at Whitehouse junction owing to the vacuum piston sticking on engine No. 48. Delay, 19 minutes. The 9.30 a.m. Bradford to Penistone was delayed on the journey, unable to release the brake properly owing to frost. Engine No. 56. Delay, 6 minutes. The 7.0 a.m. Colne to Manchester was delayed at Clifton junction, owing to the vacuum piston sticking on engine No. 668. Cause, frost. Delay, 6 minutes. The 8.0 a.m. Leeds to Liverpool was delayed on the journey, unable to get more than 14 inches of vacuum, owing to some pieces of india-rubber getting under clapper-valve of engine No. 890. Delay, 8 minutes. The 5.10 p.m. Manchester to Blackpool was delayed at Brindle Heath, owing to the diaphragm pipe breaking on engine No. 978. Delay, 20 minutes. The 7.30 a.m. Liverpool to Leeds was delayed between Liverpool and Manchester through the ball-valve diaphragm under No. 403 composite being broken, through ordinary wear and tear.	4,673,680 miles.

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
Lancashire and York- shire— <i>cont.</i>	Automatic Va- cuum Brake — <i>cont.</i>	April 18	The 9.10 a.m. Manchester to Rochdale had a late start, owing to the large ejector-valve being out of place on engine No. 657. Delay, 8 minutes.	Walter Parker Smith's Auto- matic Brake. 4,654 miles.
		" 27	The 8.5 p.m. Hellifield to Manchester was delayed on the journey, unable to release the brake quickly enough, owing to the large ejector-valve being defective on engine No. 573. Delay, 9 minutes.	
		May 1	The 8.20 a.m. Blackpool to Manchester was delayed in running, unable to maintain more than 15 inches of vacuum, owing to a leakage in the main vacuum pipe of engine No. 896. Delay, 5 minutes.	
		" 6	The 2.5 p.m. Bradford to Sowerby Bridge was delayed on Bradford Bank, owing to the tender vacuum piston sticking on engine No. 872. Delay, 4 minutes.	
		" 15	The 8.55 p.m. train, Wigan to Manchester, was delayed through the piston under third-class No. 484 sticking from some cause not ascertained.	
		June 17	The 8.10 a.m. Chatburn to Blackburn had a late start, owing to the vacuum piston-rod packing giving way on engine No. 656. Failure of material. Delay, 10 minutes.	
		" 26	The 10.20 p.m. Accrington to Preston was delayed at Pleasington, owing to the vacuum piston sticking on engine No. 48, caused by the rivets belonging to vacuum cylinder brackets breaking. Delay, 14 minutes.	
Liskeard and Caradon	—	No failures reported.	—	Walter Parker Smith's Auto- matic Brake. 4,654 miles.
London and North- Western.	Automatic Va- cuum Brake. (1,162 engines fitted. See Return No.1, p. 14.)	March 4	1. <i>Failure or partial failure to act when required in case of an accident to a train, or a collision between trains being imminent.</i> The 8.0 p.m. train from London overran Carlisle station and came into collision with a Caledonian Company's light engine which was moving along the line towards a siding. Caused by the mismanagement of the brake by the L. & N.W. engine-driver. (See return dated 5th March 1890, giving particulars of the occurrence and Colonel Rich's report on the subject.) 2. <i>Failure or partial failure to act under ordinary circumstances to stop a train when required.</i>	5,823,654 miles.
		Feb. 28	The 8.50 p.m. London to Carlisle partly overran the platform at Stafford, owing to the brake partially failing to act in consequence of there being an insufficiency of vacuum in the reservoirs. Neglect of staff.	
		March 4	The 8.25 a.m. Rugby to London overran Castletorpe station, owing to the brake failing to act. Caused by an accumulation of ice in the pipe between the engine and the tender.	

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London and North Western— <i>cont.</i>	Automatic Vacuum Brake— <i>cont.</i>	March 4	The 1.15 p.m. London to Carlisle overran the platform at Northampton owing to the brake failing to act. Caused by the accumulation of ice in the pipe between the engine and the tender.	
			<i>3. Delay in the working of trains in consequence of defects in or improper action of the brakes.</i>	
		Jan. 1	The 12.25 a.m. (excursion train) Carlisle to Birmingham lost time in running to Penrith, owing to difficulty in maintaining vacuum. Cause could not be ascertained.	
		" 1	The brake blocks on van No. 389 on the 11.5 a.m. Liverpool to London rubbed when approaching Rugby, and the vehicle had to be detached at Rugby, causing delay to train. Cause of blocks rubbing could not be ascertained.	
		" 2	The 11.45 p.m. Liverpool to London was delayed at Stafford, consequent upon the engine being unable to create the required vacuum. Cause could not be definitely ascertained.	
		" 2	The 11.35 a.m. Birmingham to Stafford was delayed in starting owing to difficulty in creating vacuum, caused by some water which had got into the pipe of rear van No. 380 having frozen. The vehicle had to be detached.	
		" 2	The 9.0 p.m. London to Crewe was delayed at Willesden and Rugby, owing to difficulty in creating vacuum. Due to the nut of the clip on brake-van 405 having slackened and allowed the stuffing box to pull off the nipple of the brake cylinder. Failure of material.	
		" 2	The 12.30 p.m. Crewe to Chester was delayed at Calveley owing to difficulty in releasing brakes. Cause could not be ascertained.	
		" 2	The 1.51 a.m. Crewe to Holyhead was stopped at Pentre siding by signals, and engine was then unable to create requisite vacuum. Due to the vacuum pipe between the engine and tender having broken. Failure of material.	
		" 2	The 11.41 p.m. Carlisle to London was delayed at Preston owing to engine being unable to create necessary vacuum. Due to the presence of ice in the pipes of engine No. 637.	
		" 3	The 7.35 p.m. Buxton to Manchester was delayed at Middlewood owing to failure of brake on rear van No. 987. Due to a temporary defect in the ball valve of the van, which afterwards righted itself. Failure of material.	
		" 7	The 12.33 p.m. Carlisle to London was delayed at Lancaster junction owing to engine being unable to release the brakes. Caused by injector of engine failing to work. Failure of machinery.	
		" 7	The 5.15 a.m. London to Crewe was delayed at Rugby owing to difficulty in maintaining the vacuum. Due to a leakage on van No. 246, owing to a rusty bolt in the valve of the van.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 84.	5. Number of Miles run by Trains fitted with Continuous Brakes
London and North- Western— <i>cont.</i>	Automatic Vacuum Brake — <i>cont.</i>	Jan. 8	The 1.5 p.m. Crewe to Birmingham was delayed in running owing to brake blocks on composite carriage No. 1228 rubbing. Due to a quantity of water being in the pipes and cylinder, which prevented the brake on the vehicle working properly.	
		" 9	The 8.41 p.m. Carlisle to London was delayed in running between Carnforth and Lancaster owing to difficulty in maintaining vacuum. Cause could not be ascertained.	
		" 10	The 3.34 a.m. Preston to Carlisle was delayed just after leaving Preston owing to engine being unable to maintain the necessary vacuum. Due to the vacuum pipe under the engine tender having broken. Failure of material.	
		" 10	The 12.23 p.m. Carlisle to London was delayed at Rugby in consequence of the engine being unable to create the required vacuum. Due to brake valve on engine No. 2061 sticking. Failure of machinery.	
		" 10	The 11.30 a.m. Holyhead to London was delayed at Madeley owing to engine being unable to maintain the necessary vacuum. Cause could not be ascertained.	
		" 11	The 6.5 p.m. Chester to Crewe was stopped by signals approaching Crewe, and difficulty was then experienced in releasing the brakes. Cause could not be ascertained.	
		" 14	The 4.30 p.m. London to Birmingham was delayed at Rugby owing to the engine being unable to create the necessary vacuum. Due to vacuum clack on the engine breaking. Failure of material.	
		" 17	The 11.45 p.m. Liverpool to London was delayed at Tamworth, owing to engine being unable to properly release the brakes. After leaving Tamworth the blocks continued to rub, and train was stopped out of course at Polesworth, causing further delay. Due to a leakage on carriage No. 1481 in consequence of the washers of the regulating valve being defective. Failure of material.	
		" 18	The 5.2 p.m. Rugby to London was delayed in running owing to difficulty in maintaining vacuum. Due to a leakage at the regulating valve of West Coast Joint Stock carriage No. 24, consequent on a cinder having got on to the seating of the valve.	
		" 18	The 12.18 a.m. Stockport to Manchester was delayed at Hyde Road, Longsight, owing to difficulty in releasing the brakes. Cause could not be ascertained.	
		" 20	The 10.20 p.m. Crewe to Holyhead was stopped out of course at Llysfaen and Llandudno junction, owing to the brake blocks on carriage No. 141 rubbing. Due to a leakage on the vehicle. Failure of material.	
		" 20	The 12.37 p.m. Preston to Carlisle was delayed in running between Preston and Milnthorpe owing to the engine being unable to maintain the necessary vacuum. Cause could not be ascertained.	

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London and North- Western— <i>cont.</i>	Automatic Vacuum Brake. — <i>cont.</i>	Jan. 22	The 8.0 p.m. London to Carlisle was delayed at Basford Wood, near Crewe. The brakes were tested at Basford Wood and acted properly, but could not be released. Due to a leakage from the stuffing box of West Coast Joint Stock brake-van No. 40, caused by a cinder getting on to the washer. Some ice had also accumulated in the vacuum pipe on the engine.	
		" 24	The 7.15 a.m. London to Carlisle was delayed at Carnforth and Lancaster, owing to difficulty in releasing the brakes. Cause could not be ascertained.	
		" 28	The 7.45 a.m. Holyhead to Crewe was delayed at Chester owing to engine being unable to maintain necessary vacuum. Due to a small bolt having got into the ejector valve on the engine.	
		" 29	The 7.0 a.m. Buxton to Manchester was delayed at Stockport and Heaton Norris, owing to difficulty in releasing brake on brake carriage No. 147. Due to water having got into the cylinder on the vehicle.	
		" 29	The 9.35 a.m. Birmingham to Stafford was delayed in running owing to engine being unable to maintain necessary vacuum. Cause could not be ascertained.	
		" 29	The 9.55 a.m. Penrith to Whitehaven had a late start from Penrith. Engine unable to work the brake. Due to vacuum pipes on the train being frozen.	
		" 29	The 7.10 a.m. Liverpool to London was delayed at Bletchley owing to difficulty in creating vacuum. Due to a leakage at one of the joints of the vacuum pipe on carriage truck No. 207. Failure of material.	
		" 31	The 10.25 a.m. Huddersfield to Kirkburton and 11.17 a.m. Huddersfield to Marsden, worked by the same engine, were delayed in running owing to difficulty in maintaining vacuum. Due to a leakage in the vacuum pipe connexions on the engine caused by a washer having got into the release valve.	
		Feb. 1	The 3.35 p.m. Preston to Carlisle was delayed in running and was stopped out of course at Oxenholme owing to difficulty in maintaining vacuum. Cause could not be ascertained.	
		" 1	The 1.15 p.m. Euston to Carlisle was delayed at Willesden. Engine could not work the brake owing to a defective pipe. Failure of material on engine.	
		" 4	The 7.50 p.m. Nuneaton to Leamington was delayed at Coventry owing to engine being unable to release brake on carriage No. 45. Cause could not be ascertained.	
		" 6	The 11.43 a.m. Chester to Holyhead was delayed at Mostyn owing to engine being unable to release brake on carriage No. 360. Some water had got into the pipe on the carriage, and it had probably frozen.	
		" 8	The 10.0 a.m. Carlisle to Preston started late from Carlisle, owing to the engine being unable to create the necessary vacuum. Due to the reservoir gauge in brake-van No. 294 sticking. Failure of material.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4 Particulars of Circumstances relating to the cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
London and North- Western— <i>cont.</i>	Automatic Vacuum Brake — <i>cont.</i>	Feb. 10	The 12.55 p.m. Carlisle to Preston was stopped out of course at Tebay. Engine could not maintain vacuum owing to a leakage at the "cut-off" valve of Caledonian Railway carriage No. 24, caused by the forks of the lever being out of order. Failure of material.	
		" 10	The 7.0 p.m. Birmingham to London was delayed in running and was stopped out of course at Rugby (No. 7 signal-box). Engine unable to maintain vacuum. Due to a leakage of tubes on engine. Failure of material.	
		" 10	The 8.0 a.m. London to Rugby was delayed at Boxmoor owing to engine being unable to maintain vacuum. Due to "cut-off" valve spindle of carriage having broken. Failure of material.	
		" 11	The 5.30 p.m. London to Manchester was delayed after leaving Crewe owing to engine being unable to maintain vacuum, and train was stopped at Sandbach out of course and vacuum recreated, after which the brakes worked all right. Cause of temporary failure could not be ascertained.	
		" 11	The 6.15 a.m. Swansea to Craven Arms was delayed at Knighton owing to the spindle of the brake on carriage No. 1497 having stuck fast. Due to water which had got into the brake connexions on the carriage, and had frozen.	
		" 12	The 12.38 p.m. Rugby to London was delayed in running to Weedon, where a stoppage was made, owing to difficulty in maintaining vacuum. Due to a leakage caused by a cinder getting into the regulating valve of composite carriage No. 1261.	
		" 12	The 10.0 p.m. London to Crewe was delayed in running owing to difficulty in maintaining vacuum and train was stopped at Heyford, near Weedon, out of course. Due to vacuum pipe on the engine being frozen.	
		" 13	The 1.5 a.m. Crewe to London was delayed in running from Stafford to Watford owing to difficulty in maintaining vacuum. Due to the gear pipe of parcel van No. 58 having frozen.	
		" 14	The 6.0 p.m. Swansea to Shrewsbury was delayed at Llangunllo. Engine unable to release brakes on carriage No. 1226 owing to the stuffing box failing. Failure of material.	
		" 14	The 7.45 a.m. Holyhead to Crewe was delayed at Penmaenmawr owing to engine being unable to release the brakes. Cause could not be ascertained.	
		" 16	The 5.23 p.m. Crewe to London was delayed at Willesden. Engine unable to release brake on parcel van No. 88. Due to a leakage at the regulating valve of the van in consequence of a cinder having got on the seating of the valve.	
		" 18	The 12.5 a.m. Carlisle to London was delayed in running between Preston and Stafford; the train was also delayed at Stafford and had to be stopped out of course at Milford and Brocton owing to difficulty in maintaining vacuum. Due to the small ejector on the engine not working properly. Failure of machinery.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 84.	5. Number of Miles run by Trains fitted with Continuous Brakes.
London and North- Western— <i>cont.</i>	Automatic Vacuum Brake — <i>cont.</i>	Feb. 20	The 11.40 a.m. Stafford to London was delayed at Kilsby and Crick. Engine unable to maintain vacuum in consequence of a leakage in the stuffing box on West Coast Joint Stock carriage No. 292. Failure of material.	
		" 22	The 11.15 p.m. (excursion train) Chester to Bangor had a late start from Chester owing to difficulty in creating vacuum. Due to the spindle of the "cut-off" valve on carriage No. 283 having given way. Failure of material.	
		" 23	The 3.35 p.m. Warrington to Carlisle was delayed at Preston. Engine unable to release brakes. Due to the packing ring of the stuffing-box of brake-van No. 31 being defective, thus causing a leakage. Failure of material.	
		" 23	The 2.45 p.m. Crewe to Holyhead had a late start from Crewe owing to engine being unable to release the brakes. Cause could not be ascertained.	
		" 25	The 6.0 a.m. Marsden to Leeds was delayed at Dewsbury owing to difficulty in maintaining vacuum. Cause could not be ascertained.	
		" 28	The 8.30 a.m. Peterborough to Rugby was delayed at Lubenham owing to engine being unable to release brake on carriage No. 127. Cause could not be ascertained.	
		" 28	The 12.0 night train from London to Liverpool was delayed at Rugby. Engine unable to release brake on van No. 462. Cause could not be ascertained.	
		March 1	The 8.41 p.m. Carlisle to London was delayed at Rugby. Engine unable to create vacuum. Due to ice being in the pipes of the engine.	
		" 2	The 6.0 p.m. Chester to Holyhead was delayed at Abergele owing to difficulty in releasing brake on carriage No. 1114, and also lost time in running from Abergele to Bangor in consequence of the blocks on the carriage rubbing. Cause could not be ascertained.	
		" 3	The 4.45 a.m. Stafford to Birmingham had a late start from Stafford. Difficulty in creating vacuum owing to the brake apparatus under van No. 580 being frozen.	
		" 3	The 9.0 p.m. Liverpool to Manchester was delayed at Earlstown. Brake on rear van No. 179 could not be released owing to brake apparatus on the vehicle being frozen.	
		" 3	The 8.0 p.m. train from London to Carlisle was stopped out of course at Tring owing to the brake blocks of van No. 35 being on. The brake could not be released and the van was detached. Failure due to the freezing of the vacuum pipe on the van.	
		" 3	The 11.45 a.m. London to Rugby had a late start from London. Engine unable to create vacuum. Due to ice being in the brake gear on the rear van, No. 329.	
		" 4	The 9.0 a.m. Wolverhampton to London had a late start from Wolverhampton. Difficulty in creating vacuum owing to the brake apparatus on van No. 11 being frozen.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 32.	5. Number of Miles run by Trains fitted with Continuous Brakes.
London and North- Western— <i>cont.</i>	Automatic Vacuum Brake — <i>cont.</i>	March 4	The 3.35 a.m. Crewe to Rugby was delayed in running to Stafford owing to engine being unable to maintain vacuum. Cause: leakage, due to defective washer of regulating valve of carriage No. 3. Failure of material.	
		" 4	The 2.40 a.m. Rugby to Peterborough was delayed at Wansford. Engine unable to create vacuum owing to the pipe between it and the tender being blocked up with ice.	
		" 4	The 7.15 a.m. Rugby to Stafford was delayed at Milford and Brocton owing to engine being unable to release brakes. Due to ice being in the pipes of the engine.	
		" 8	The 5.26 p.m. Rugby to London was delayed at Leighton. Engine unable to maintain vacuum. Cause could not be ascertained.	
		" 8	The 6.15 p.m. Penrith to Preston was stopped at Eamont junction owing to blocks on rear van No. 25 rubbing. Engine unable to release the brake on the van. Cause could not be ascertained.	
		" 10	The 8.41 p.m. Carlisle to London was stopped just after leaving Carlisle station owing to brake on West Coast Joint Stock sleeping composite No. 121 being on. Engine was unable to release the brake on the carriage. Due to the lever connecting the quadrant which is on the side of the under frame of the five-way cock being broken, thus allowing the brake to leak on. Failure of material.	
		" 12	The 10.0 p.m. London to Crewe was delayed at Stafford detaching van No. 78, the brake blocks of which had been rubbing during the journey. Due to one of the links of the brake gear on the van catching on the head of a pin, thus preventing the brake releasing itself. Failure of machinery.	
		" 12	Engine had difficulty in starting the 2.20 p.m. Manchester to Liverpool, and was subsequently unable when running, to keep the brake off North-Eastern Railway Company's van No. 397. Cause could not be ascertained.	
		" 13	The 11.5 a.m. Liverpool to London was delayed at Rugby. Engine unable to maintain vacuum owing to a leakage at the joint under the release valve on left splashers of the engine. Failure of material.	
		" 15	The 9.0 a.m. Buxton to Manchester was delayed between Buxton and Bibbington's siding owing to engine being unable to maintain vacuum. Cause could not be ascertained.	
		" 16	The 4.0 p.m. Liverpool to London was delayed at Crewe owing to engine being unable to maintain vacuum. Cause could not be ascertained.	
		" 17	The 5.20 p.m. Liverpool to London lost time in running after leaving Crewe and train was stopped out of course at Madeley, owing to brake blocks on van No. 82 rubbing. Neglect of staff.	
		" 17	The 2.20 p.m. Manchester to Liverpool was stopped out of course at Huyton owing to the brakes rubbing. Due to a pipe on the rear of the train having come off the plug. Neglect of staff.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c., under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
London and North- Western— <i>cont.</i>	Automatic Vacuum Brake — <i>cont.</i>	March 18	The 10.0 a.m. London to Carlisle was stopped by signals at Hadesmore crossing, near Lichfield, and engine had difficulty in releasing the brakes and in maintaining vacuum in running to Crewe. Cause could not be ascertained.	
		" 20	The 3.50 p.m. Crewe to Birkenhead was delayed at Crewe. Engine unable to maintain vacuum owing to release valve being out of order. Neglect of driver.	
		" 20	The 8.0 a.m. Market Harboro' to Rugby was delayed at Theddingworth. Engine unable to release brake on composite carriage No. 848. Cause could not be ascertained.	
		" 22	The 7.10 a.m. Liverpool to London had a late start from Liverpool. Cause: leakage from vacuum pipe under carriage No. 16 (which was detached) owing to the pipe breaking. Failure of material.	
		" 26	The 6.25 p.m. Bletchley to London started late owing to engine being unable to create vacuum. Cause could not be ascertained.	
		" 27	The 12.10 a.m. Holyhead to Crewe was delayed at Chester. Engine unable to maintain vacuum owing to defective washer on van No. 116. Failure of material.	
		" 29	The 4.35 a.m. Knighton to Llandovery lost time in running owing to engine being unable to maintain vacuum. Cause: leakage from pipes on engine tank. Failure of material.	
		April 2	The 11.40 p.m. (excursion train) London to Preston lost time in running between Rugby and Nuneaton owing to engine being unable to maintain vacuum. Cause: leaky tubes on engine. Failure of material.	
		" 3	The 3.35 p.m. Stafford to London was delayed at Bletchley. Engine had difficulty in releasing brake on van No. 234. Cause could not be ascertained.	
		" 3	The 12.5 a.m. Carlisle to London was delayed near Crewe. After brakes had been applied the engine was unable to release them. Cause could not be ascertained.	
		" 10	The 11.41 p.m. Carlisle to London had a late start from Carlisle, and was also delayed at Shap Summit owing to difficulty in creating vacuum. The train also lost time between Crewe and Stafford through the engine being unable to maintain the necessary vacuum. Due to a leakage in "cut-off" valve on Caledonian Company's carriage No. 242 caused by a defective washer. Failure of material.	
		" 12	The 8.50 p.m. London to Carlisle was delayed at Rugby and Nuneaton owing to difficulty in maintaining vacuum. Due to a weakness of the spring in one of the hose-pipes on the engine. Failure of material.	
		" 16	The 8.0 p.m. London to Carlisle lost time in running between Rugby and Crewe, and was also stopped at Tamworth out of course, owing to necessary vacuum not being maintained. Carelessness on the part of the engine-driver.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the cause of Failure, &c. under the three headings given on page 30.	5. Number of Miles run by Trains fitted with Continuous Brakes.
London and North- Western— <i>cont.</i>	Automatic Vacuum Brake — <i>cont.</i>	April 18	The 9.0 p.m. London to Stafford was delayed at Wolverhampton, engine being unable to release brake on saloon carriage No. 138. Due to a cinder having got on the seating of the regulating valve, causing a leakage.	
		„ 23	The 12.37 p.m. Preston to Carlisle lost time in running to Lancaster owing to engine being unable to maintain vacuum. Due to a leakage on the engine consequent on some grit having got into the seating of the air-pump valve.	
		„ 25	The 5.38 p.m. Carlisle to London lost time in running to Penrith owing to engine not maintaining necessary vacuum. Due to leakage on engine. Failure of material.	
		„ 28	The 7.20 a.m. Stockport to Broadheath was delayed in running between Northenden junction and Broadheath owing to engine being unable to maintain vacuum. Due to tubes on engine leaking. Failure of material.	
		„ 28	The 1.4 p.m. Rugby to London was delayed in running between Northampton and Bletchley owing to the blocks on brake-van next engine rubbing. Caused by the driver not maintaining in the train pipe the quantity of vacuum created. Neglect of driver.	
		May 6	The 12.5 a.m. Carlisle to London was stopped at Bamfurlong junction out of course owing to the brake blocks on carriage No. 310 rubbing. Due to leakage caused by a cinder having got on to the seating of the regulating valve of the carriage.	
		„ 7	The 12.5 a.m. Carlisle to London was delayed at No. 12 box, Carlisle, owing to the brake blocks on West Coast Joint Stock van No. 322 rubbing. Caused by the pin of the reversing links on the van working out. Failure of material.	
		„ 12	The 4.48 a.m. Crewe to Manchester was delayed in running and stopped out of course at Chelford and Alderley Edge, owing to engine being unable to maintain the necessary vacuum. Due to tubes on engine leaking. Failure of material.	
		„ 12	The 9.55 p.m. Crewe to Manchester was delayed at Heaton Norris junction owing to engine being unable to maintain necessary vacuum. Due to engine not being able to make steam and also to the tubes in the fire-box leaking. Failure of material.	
		„ 12	The 3.35 p.m. Preston to Carlisle was delayed at Carnforth owing to difficulty in releasing brakes, and lost time in running to Shap Summit through difficulty in maintaining the vacuum. Cause could not be ascertained.	
		„ 17	The 9.0 a.m. Wolverhampton to London was delayed at Birmingham owing to engine being unable to maintain vacuum. Due to clack on engine breaking. Failure of material.	
		„ 21	The 5.20 p.m. Liverpool to London lost time in running between Bletchley and Willesden owing to difficulty in maintaining vacuum. Due to pipe of London and South-Western Railway truck No. 52 in rear of train from Rugby having come partly off the plug.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
London and North-Western— <i>cont.</i>	Automatic Vacuum Brake— <i>cont.</i>	May 21	The 10.0 a.m. from London to Carlisle lost time in running from Tebay to Shap Summit owing to engine being unable to maintain necessary vacuum. Due to some grit having got on to the seating of the regulating valve of saloon No. 138, causing a leakage.	
		" 24	The 5.5 p.m. Chester to Bangor was delayed at Muspratt's siding owing to the brake blocks on carriage No. 725 rubbing. Cause could not be ascertained.	
		" 24	The 10.0 a.m. from London to Carlisle was delayed in running owing to difficulty in maintaining vacuum between Preston and Carlisle. Due to an india-rubber washer having got into the clack on the engine.	
		" 24	The 9.15 a.m. Chester to Birkenhead was delayed at Mollington owing to the vacuum cylinder of Great Western Company's carriage No. 537 being cracked. Failure of material.	
		" 26	The 5.25 p.m. Liverpool to Manchester (London Road) had a late start from Liverpool owing to engine being unable to create vacuum. Due to clack on engine breaking. Failure of material.	
		" 26	The 5.15 a.m. London to Carlisle had a late start from Euston owing to engine being unable to maintain vacuum. Due to some waste having got under the clack on the engine.	
		" 27	The 12.0 noon Holyhead to Chester was delayed at Llandudno junction owing to a defective hose-pipe on van No. 2376 (not fitted with brake blocks) interfering with the proper working of the brakes. Failure of material.	
		" 28	The 9.40 p.m. Stechford to Wolverhampton was delayed at Aston owing to engine being unable to release the brakes. Probably owing to a greater amount of vacuum having been maintained by the air pump than could be re-created with the ejector after stopping at Aston.	
		" 29	The 7.12 p.m. Stafford to Birmingham was stopped out of course at Four Ashes, and also lost time in running to Wolverhampton, owing to engine being unable to maintain vacuum. Due to a leakage caused by a defective washer in regulating valve of carriage No. 123. Failure of material.	
		June 3	The 12.37 p.m. Preston to Carlisle was delayed at Lancaster owing to difficulty in releasing the brakes. Cause could not be ascertained.	
		" 3	The 9.40 a.m. Manchester to Chester was delayed at Kenyon junction owing to the brake blocks on carriage No. 933 rubbing. Due to the spindle of the cut-off valve on the coach having given way. Failure of material.	
		" 6	The 4.33 p.m. Stafford to Birmingham was delayed in starting, and also at Wolverhampton, owing to the brake blocks of carriage No. 486 rubbing. Due to leakage at the regulating valve on the carriage. Failure of material.	

1. Name of Railway Company.	2. Name or Descrip- tion of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
London and North- Western— <i>cont.</i>	Automatic Va- cuum Brake — <i>cont.</i>	June 6	The 12.55 p.m. Carlisle to London was delayed at Southwaite owing to engine being unable to maintain vacuum. Due to one of the iron connexions under parcel van No. 2053 having given way. Failure of material.	
		" 8	The 4.42 a.m. Crewe to Liverpool was delayed at Crewe and Warrington owing to difficulty in releasing brake on saloon carriage No. 115. Due to a defective packing ring of the stuffing box on the saloon. Failure of material.	
		" 10	The 12.0 night train London to Crewe was delayed at Northampton owing to difficulty in releasing brakes. Cause could not be ascertained.	
		" 11	The 1.0 p.m. Birkenhead to Chester was delayed at Birkenhead (Town Station) owing to the brake on London and North-Western van No. 335 having failed through the nut of the reservoir gauge giving way. Failure of material.	
		" 13	The 12.10 a.m. Crewe to Normanton was brought to a stand at Holmes Chapel owing to brakes going on consequent on vacuum not being maintained. Neglect of driver.	
		" 18	The 2.15 p.m. Bletchley to Rugby was delayed at Welton owing to engine being unable to create requisite vacuum. Due to hose-pipe on engine collapsing. Failure of material.	
		" 21	The 8.33 a.m. Manchester to Crewe was delayed in running, engine being unable to maintain vacuum. Due to brake cylinder on Great Western Company's carriage No. 1319 having broken. Failure of material.	
		" 23	The 4.25 p.m. Carlisle to London was delayed at Carlisle, Penrith, and Shap Summit owing to difficulty in creating vacuum. Due to a leakage in consequence of a cinder having got on the seating of regulating valve of West Coast Joint Stock carriage No. 20.	
		" 23	The 9.8 p.m. Crewe to Liverpool was stopped out of course after leaving Runcorn owing to the brake blocks rubbing on carriage No. 805. Due to a leakage in consequence of a cinder having got on the seating of regulating valve of the carriage.	
			1. Nil.	
	Vacuum Brake (18* engines fitted. See Return No.1, page 14.)		2. <i>Failure or partial failure to act under ordinary circumstances to stop a train when required.</i>	2,995,388 miles.
		Jan. 3	The 8.45 a.m. Bolton to Warrington overran the platform at Atherton owing to the brake failing to act. Caused by the bursting of the hose-pipe on third-class brake coach No. 1204. Failure of material.	
			3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i>	
		" 2	The 5.55 p.m. Wolverhampton to Wednesbury had a late start. The brake on the rear van, No. 71, could not be worked, and the vehicle had to be detached. Due to water having got into the pipe and frozen.	

* Exclusive of engines also fitted with automatic vacuum brakes.

1. Name of Railway Company.	2. Name or Descrip- tion of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
London and North- Western— <i>cont.</i>	Vacuum Brake — <i>cont.</i>	Jan. 11	The 12.0 night train, Euston to Crewe, was delayed in starting from Euston, owing to difficulty in creating and maintaining the necessary vacuum. Due to a leakage on composite carriage No. 837, consequent on the washers of the "cut-off" valve being defective. Failure of material.	
		Feb. 24	The 6.30 p.m. Watford to London lost time in running from Willesden. Engine unable to work brakes owing to a washer giving way. Failure of material on engine.	
		March 13	The 5.45 p.m. London to Aylesbury lost time in running from King's Langley owing to engine being unable to work vacuum brake, consequent upon a pipe having burst. Failure of material on engine.	
		" 24	The 7.42 a.m. Liverpool (Lime Street) to Liverpool (Alexandra Dock) had a late start. Engine unable to create vacuum owing to pin coming out of release valve at back of engine cab. Failure of machinery.	
		April 4	A special train from Oxenholme to Windermere was delayed in running to Staveley, owing to the brake blocks on carriage No. 1019 rubbing. Due to a leakage under the carriage consequent on a cinder having got on to the seating of the "cut-off" valve.	
		" 15	The 12.25 p.m. Wolverhampton to Walsall was delayed at Heath Town junction, owing to engine being unable to release the brakes. Cause could not be ascertained.	
		May 21	The 2.0 p.m. train, Walsall to Burton, had a late start from Walsall, and was also delayed at Rushall and Pelsall, owing to difficulty in working the brakes. Due to some waste being drawn into the hose-pipe during coupling. Carelessness of staff.	
		No failures reported.	—	
		No failures reported.	—	
				Clarke and Webb's Brake. 765,918 miles.
London and South- Western.	Vacuum Auto- matic Brake. (506 engines fitted. See Return No. 1, page 16.)		1 Nil	Fay's Continuous Brake. 71,873 miles. 4,468,436 miles.
			2. <i>Failure or partial failure to act under ordinary circumstances to stop a train when required.</i>	
		Feb. 12	Four minutes delay at Surbiton: Train overran platform. Tender brake shaft arm rubbing against vacuum coupling of the "Giraffe" engine.	
		June 27	One minute delay at Salisbury. Train overran platform. Defective pipes on Nos. 423 composite carriage and 8 passenger brake-van.	
			3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i>	
		Jan. 2	Sixteen minutes delay at St. Denys. Pin of brake gear broken of No. 480 third-class carriage.	

1. Name of Railway Company.	2. Name or Description of brake which failed or caused delay.	2. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5 Number of Miles run by Trains fitted with Continuous Brakes.
London and South- Western— <i>cont.</i>	Vacuum Auto- matic Brake — <i>cont.</i>	Jan. 8	Seven minutes lost on journey. Brake adjusted too tightly.	
		" 28	Fourteen minutes lost on journey. Clapper valve washer of ejector defective on No. 445 engine.	
		Feb. 10	Three minutes lost on journey. Defective miniature sack on No. 364 passenger brake-van.	
		" 10	Seven minutes lost on journey. Defective miniature sack on No. 364 passenger brake-van.	
		" 18	Three minutes lost on journey. Nut and washers of vacuum flapper valve displaced on No. 375 engine.	
		March 1	Six minutes delay at Wimbledon. Vacuum pipe under tender of No. 445 engine frozen.	
		" 2	Eight minutes delay at Waterloo. Drip valve and pipe between No. 26 engine and tender frozen.	
		" 3	Nine minutes delay at Dorchester. Tender steam brake pipe of No. 190 engine frozen.	
		" 3	Five minutes delay at Woking. Ice in cylinder of No. 716 third-class carriage.	
		" 3	Eight minutes delay at Woking. Ice in cylinder of No. 223 passenger brake-van.	
		" 8	Four minutes late starting. Branch pipe broken of No. 552 third-class carriage.	
		" 13	Three minutes lost on journey. Leakage in vacuum pipe of No. 72 carriage truck.	
		" 22	Two minutes delay at Chertsey. Ram of piston worked over the stroke of No. 247 passenger brake-van.	
		April 1	Five minutes delay at "D" box, Vauxhall. Vacuum ejector drawing air, through the nut having slackened back of No. 133 engine.	
		" 9	Two minutes lost on journey. Leakage in main train pipe of No. 1 carriage truck.	
		" 10	Four minutes lost on journey. Brake adjusted too tightly of No. 12 saloon carriage.	
		" 15	Two minutes delay at Waterloo. Top bolt of main train pipe broken off of No. 314 engine.	
		" 18	Four minutes delay after leaving Brockenhurst. Centre rod of brake gear broken off No. 55 passenger brake-van.	
		" 19	Four minutes delay at Woking. Brake adjusted too tightly of No. 261 passenger brake-van.	
		" 19	Six minutes delay at Effingham junction. Brake adjusted too tightly of No. 261 passenger brake-van.	
		" 21	Two minutes delay at Wimbledon. Vacuum ejector blowing through of No. 56 engine.	
		" 28	Five minutes delay at Templecombe. Top hanger pin of brake gear broke of No. 809 third-class carriage.	
		" 29	Nine minutes delay at Upwey. Piston fast in vacuum cylinder of No. 426 third-class carriage.	
		May 13	Nine minutes delay at Eastleigh. Dirt in release valve of No. 378 passenger brake-van.	
		" 31	Three minutes delay at Romsey. Brake required re-adjusting of No. 234 composite carriage.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
London and South- Western— <i>cont.</i>	Vacuum Auto- matic Brake — <i>cont.</i>	June 12	Two minutes lost between Staines and Ashford. Branch pipe broken of No. 146 third-class carriage.	
		„ 20	Fourteen minutes delay at Worcester Park. Block hanger pin broken of No. 116 third-class carriage.	
		„ 28	Seven minutes lost on journey. Leakage in pipe of No. 75 carriage truck.	
London, Brighton, and South Coast.	Westinghouse Continuous Automatic Air Brake. (356 engines fitted. See Return No. 1, page 16.)		1 and 2. Nil.	3,502,073 miles.
			3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i>	
		Jan. 20	9.50 a.m. Victoria to Eastbourne delayed 12 minutes at Keymer junction. Brake blocks of No. 66 second-class carriage hot, apparently owing to triple valve getting slightly stuck.	
		„ 21	10.20 a.m. Horsham to Victoria delayed 7 minutes at Ockley Bank. Hose coupling on No. 1249 Great Northern horse-box burst.	
		„ 23	4.36 p.m. Victoria to London delayed 2 minutes at Battersea Park. Hose coupling on No. 778 brake-van burst.	
		„ 23	4.18 p.m. East Croydon to London delayed 4 minutes at Blue Anchor. Driver failing to release brake, which he attributed to a leak, but did not inform examiner.	
		„ 25	8.30 a.m. Hastings to London delayed 4 minutes between Polegate and Berwick. Copper pipe leading from donkey pump to main reservoir on engine No. 201 broke in the union collar.	
		Feb. 23	10.48 a.m. Sutton to London delayed 2 minutes at Sutton. Donkey air pump reversing piston rod bent.	
		March 3	5.11 p.m. London to Epsom Town delayed 5 minutes at Blue Anchor. Releasing brake owing to frost in coupling hose of No. 731 third-class carriage.	
		„ 11	11.50 a.m. Epsom Downs to Norwood junction delayed 6 minutes between Banstead and Belmont. Hose coupling on No. 49 second-class carriage burst.	
		„ 12	8.1 p.m. London to Newhaven delayed 4 minutes between Lewes and Newhaven. Donkey air pump reversing piston rings broken.	
		„ 17	10.1 a.m. London Bridge to Crystal Palace delayed 3 minutes at Old Kent Road. Triple valves leaking in well joint on Nos. 714 third and 68 composite carriages.	
		„ 21	12.26 p.m. London Bridge to Crystal Palace delayed 3 minutes between Brockley and Forest Hill. Triple valve on No. 68 composite carriage leaking.	
		„ 24	4.5 p.m. Victoria to Brighton delayed 2 minutes between Clapham junction and New Wandsworth. Hose coupling on No. 411 London and North-Western horse-box burst.	
		„ 25	1.5 p.m. Victoria to Brighton delayed 1 minute at Cheam. Triple valve on No. 59 horse-box sticking.	
		April 2	9.6 p.m. London Bridge to Victoria delayed 4 minutes between Queen's Road and Peckham Rye. Hose coupling on engine No. 62 burst.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
London, Brighton, and South Coast— <i>cont.</i>	Westinghouse Continuous Automatic Air Brake— <i>cont.</i>	April 7	4.36 p.m. special Eastbourne to Victoria delayed 6 minutes at Willingdon. Hose coupling on No. 529 third-class carriage burst.	
		„ 8	1.50 p.m. Victoria to Brighton delayed 3 minutes in Brighton Yard. Donkey air pump failing, reversing valve rings worn.	
		„ 22	7.15 a.m. London Bridge to Victoria delayed 4 minutes at London Bridge. Donkey air pump upper and lower main piston valve nuts worked off.	
		„ 22	10.25 a.m. Hastings to Victoria delayed two minutes at Polegate. Union nut broke off main air pipe leading from donkey pump to reservoir on engine.	
		„ 26	12.9 a.m. Victoria to West Croydon delayed 3 minutes on Grosvenor Bank. Donkey air pump upper main valve ring broken.	
		May 20	4.0 p.m. London to Portsmouth delayed 2 minutes at Arundel. Slide valve of triple of No. 673 first-class carriage worn.	
		June 17	1.0 p.m. Victoria to Portsmouth delayed 5 minutes between Battersea Park and Pouparts junction. Hose coupling on No. 617 third-class carriage burst.	
		„ 18	4.57 p.m. Polegate to Hastings delayed 2 minutes between Pevensy Sluice and Boxhill. Main air pipe broke at the union collar adjoining driver's air regulator.	
		„ 28	7.10 p.m. Brighton to London Bridge delayed 5 minutes at Coulsdon. Half- inch cock on main air pipe of engine No. 446 broken off in the thread.	
London, Chatham, and Dover.	Westinghouse Continuous Automatic Air Brake. (108 engines fitted. See Return No. 1, page 16.)		1. Nil.	999,986 miles.
			2. <i>Failure or partial failure to act under ordinary circumstances to stop a train when required.</i>	
		Feb. 14	7.11 p.m. Moorgate Street to Victoria. Overshot Borough Road station by five coach lengths, and Walworth Road half a carriage length. Cause could not be discovered.	
		March 3	8.12 a.m. Moorgate Street to Crystal Palace. Overshot platform at Alders- gate Street half a coach length. Severe frost affected the proper working of the brake.	
		„ 3	12.0 midt. Victoria to New Brompton. Brake on engine and tender failed to act when running down Strood Bank. Triple valves frozen.	
		„ 10	6.35 p.m. Holborn to Bickley. Overshot platform at Penge the train's length. Fault of engineman.	
		June 16	5.21 p.m. Victoria to Hendon. Overshot platform at Battersea Park the train's length. Neglect of coupler to open cocks of brake pipe at each end of a Midland Company's carriage truck, second vehicle from engine.	

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London, Chatham, and Dover— <i>cont.</i>	Westinghouse Continuous Automatic Air Brake— <i>cont.</i>		3. <i>Delay in the working of trains in consequence of defects in or improper action of the brake—</i> <i>a. Through failure of machinery or material.</i>	
		Jan. 13	10.18 a.m. Victoria to Crystal Palace. Two minutes after leaving Clapham Road station through coupling hose bursting on No. 178 second-class brake.	
		" 22	2.7 p.m. Victoria to Moorgate Street. Two minutes at Grosvenor Road bank through union nut on No. 183 second-class brake slacking back.	
		" 27	3.38 p.m. Herne Hill to Ramsgate. Three minutes between Reculvers and Birchington through brake applying itself on saloons Nos. 18 and 21. Tested in the shops, but cause could not be discovered.	
		Feb. 10	5.45 a.m. Victoria to Dover. Two minutes at Adisham owing to brake not coming off properly on No. 87 second-class carriage. Cause could not be discovered.	
		" 13	5.13 p.m. Holborn to Crystal Palace. Five minutes at Honor Oak through brake not coming off three of the coaches next to the engine. Cannot say cause.	
		March 3	7.35 a.m. Victoria to Crystal Palace and other trains. Brake only partly worked on trains through pipes being frozen.	
		" 3	8.14 a.m. Gravesend to Victoria. Twelve minutes at Rosherville and Southfleet. Brake would not come off some of the carriages. Effect of frost.	
		" 4	6.43 a.m. Victoria to Moorgate Street. Four minutes at Battersea Park Road and Wandsworth Road through brake not releasing itself. Effect of frost. Hand-brake worked the rest of the journey.	
		" 4	9.45 a.m. Victoria to Dover. Two minutes at Herne Hill through brake not releasing itself on No. 364 third class. Effect of frost.	
		" 8	4.43 p.m. Moorgate Street to Victoria. Five minutes at Aldersgate Street through brake not coming off in the centre of the train. Cannot say cause.	
		" 8	8.40 a.m. down Dover boat. Four minutes between Shepherd's Well and Kearsney through brake going on throughout the train. Cause could not be discovered. Brake worked all right afterwards.	
		" 10	5.15 p.m. Victoria to Ramsgate. Three minutes at Margate through brake not coming off No. 61 brake-van. Coach tested in shops, but cause could not be discovered.	
		April 1	10.30 a.m. Bickley to Victoria. One minute at Sydenham Hill through coupling hose bursting on No. 228 first class.	
		" 19	8.15 p.m. down Dover boat. Seven minutes on journey through brake applying itself several times on No. 54 bogie carriage. Cause could not be discovered. Coach tested in shops.	
		" 21	8.40 a.m. down Dover boat. Eight minutes between Herne Hill and Chatham through brake going on No. 233 first class. Cannot say cause. Coach tested in shops.	

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London, Chatham, and Dover— <i>cont.</i>	Westinghouse Continuous Automatic Air Brake— <i>cont.</i>	April 21	5.0 p.m. Victoria to Gravesend. Two minutes between Victoria and Grosvenor Road to release brake hard on on No. 295 third class. Cause could not be discovered.	
		May 7	8.0 a.m. Ramsgate to Holborn. Ten minutes through breakage at Bush Bank of main pipe from the pump to the reservoir at the collar at reservoir end. Brake not worked the rest of the journey.	
		" 9	8.40 a.m. down Dover boat. Two minutes between St. Mary Cray and Swanley, brake applied itself on the whole of the train. Cannot say cause.	
		" 13	7.15 p.m. Dover to Victoria. Five minutes at Sittingbourne through brake applying itself on No. 2 second class. Cause could not be discovered. Coach tested in shops.	
		" 15	10.45 a.m. Victoria to Finchley. One minute at Ludgate Hill through coupling hose bursting on Midland Company's carriage truck No. 302.	
		" 15	8.10 p.m. Holborn to Herne Hill. Two minutes at Loughboro' through brake applying itself. Leak in pipe from donkey to reservoir.	
		" 21	10.0 a.m. Victoria to Dover. Five minutes at Dulwich through brake applying itself on luggage brake-van No. 23. Cannot say cause.	
		" 24	10.55 a.m. down Dover boat. Two minutes at Grosvenor Road. Brake applied itself on No. 238 first class through defective washer in hose-pipe of No. 222 first class to which it was attached.	
		" 25	7.15 p.m. Ramsgate to Victoria. Two minutes between Ramsgate and Broadstairs through brake applying itself on No. 268 third class. Cause could not be discovered.	
		June 11	8.20 a.m. Victoria to Faversham. Two minutes between Herne Hill and Dulwich, coupling hose burst on Great Northern Railway horse-box No. 1215 next to engine. Horse-box detached at Farningham.	
			<i>b. Through fault of Company's servants.</i>	
		Jan. 1	6.7 p.m. Moorgate Street to Loughboro'. Three minutes late in starting through brake not releasing itself. Cock at tail end of train not properly closed.	
		" 30	8.45 a.m. Gravesend to St. Paul's. Three minutes through brake applying itself on No. 117 third-class brake at Swanley. Cock appeared to have been opened by some person riding in the guard's compartment.	
		Feb. 27	7.50 p.m. Moorgate Street to Victoria. Six minutes late in starting, through pressure in engine being lower than the one that came off the train. Had to pump up air to release brakes.	
		April 3	4.0 p.m. Victoria to Gravesend. Four minutes at Swanley through brake not releasing itself. Inexperience of driver in working brake. A similar delay occurred also with return train 5.40 p.m. ex Gravesend.	

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London, Chatham, and Dover— <i>cont.</i>	Westinghouse Continuous Automatic Air Brake— <i>cont.</i>	May 22	11.33 p.m. Victoria to Moorgate Street. Three minutes at Grosvenor Road by brakes going on through a leakage. Engine brake pipe not properly coupled up to carriage.	Automatic Vacuum Brake 24,074 miles.
		June 5	2.10 p.m. Ramsgate to Victoria. Two minutes between Sittingbourne and Newington through brakes going on. Fault of driver.	
		No failures reported.	—	
Londonderry - - -	- - -	No failures reported.	—	Westinghouse Automatic Brake. 19,824 miles.
London, Tilbury, and Southend.	Westinghouse Automatic Brake. (80 engines fitted. See Return, No. 1, page 16.)	March 18	1 and 2. Nil. 3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i>	353,135 miles.
		" 18	7.0 p.m. train from Shoebury to Fen- church Street. Two minutes delay. Air pump failed on engine No. 3, owing to the top head of piston valve working off. Hand-brake used.	
		" 18	9.0 p.m. train from Fenchurch Street to Shoebury. Three minutes delay. Air pump failed on engine No. 3, owing to the top head of piston valve working off. Hand-brake used.	
Manchester, Sheffield, and Lincolnshire	Vacuum Automatic Brake. (174 engines fitted, and 168 goods engines used for passenger trains when required. See Return No. 1, page 18.)	No failures reported.	—	Clark and Webb's Chain Brake. 169 miles.
		Jan. 2	1 and 2. Nil. 3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i>	1,669,110 miles.
		" 3	8.30 a.m. Manchester to London. Slight delay in running. Staff omitted to release brake on Great Northern brake- carriage No. 184 at rear of train after attaching two Great Eastern horse- boxes, fitted with Westinghouse brake, and not provided with through pipes. Neglect of staff.	
		Feb. 6	9.0 a.m. Sheffield to Eekington. 5 minutes delay at Sheffield, No. 8 box. Blocks on Manchester, Sheffield, and Lincoln- shire van No. 866 had momentarily applied themselves. Cause not known. Brake worked all right before and after- wards.	
			11.55 a.m. Doncaster to Sheffield. 7 minutes delay at Rotherham. Piston on tender of engine No. 266 stuck, probably owing to rolling ring being temporarily twisted.	

1. Name of Railway Company.	2. Name or Description of brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
Manchester, Sheffield, and Lincolnshire— <i>cont.</i>	Vacuum Automatic Brake— <i>cont.</i>	Feb. 26	7.10 p.m. Sheffield to Barnsley. 18 minutes lost in running. Driver unable to keep brake off. Cause not satisfactorily explained, but supposed to be due to clappet valve being kept off its seating by a piece of waste or dirt, or to an imperfect joint at a horse-box coupling which was detached at Barnsley, and brake worked all right on the return journey.	
		April 3	2.35 p.m. Grimsby to Sheffield. 6 minutes delay at Habro' putting new washer on coupling pipe of fish-truck No. 566. Driver had to employ large ejector to keep brake off, owing to the washer being minus. Neglect of staff.	
		,, 20	5.0 p.m. Manchester to London. 4 minutes delay at Godley, and 6 minutes at Penistone. Piston on Great Northern carriage No. 422 stuck. The cylinder on this vehicle had a separate reservoir, being one converted from simple to automatic, and it is assumed that the diaphragm when rising got askew and failed to release itself.	
		June 29	5.0 p.m. Manchester to London. 6 minutes delay at Penistone. Driver unable to get brake off after attaching a carriage. Cause not exactly known, but supposed to be due either to valve on saloon No. 1033 having been tampered with, or to the ball valve temporarily sticking.	
Manchester South Junction and Altrincham.	- - -	No failures reported.	---	Smith's Vacuum Brake, 108,648 miles. Vacuum Automatic Brake, 3,908 miles.
Mersey Railway	Vacuum Automatic Continuous Brake. (15 engines fitted. See Return No. 1, page 18.)	June 19	1 and 2. Nil. 3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i> Slight delay to 9.0 a.m. up train, at James Street, owing to the rolling ring of right-hand vacuum piston of engine No. 15 getting twisted. Failure of material.	108,297 miles.
Metropolitan	Smith's Vacuum Brake. (66 engines fitted. See Return No. 1, page 18.)	Feb. 26	1. Nil. 2. <i>Failure or partial failure to act under ordinary circumstances to stop a train when required.</i> On arriving at a station on the journey the brake failed to act, causing the train to overrun the platform the length of two coaches, in consequence of a piece of waste getting under the valve. 1 minute delay. Driver fined.	1,017,388 miles.
		March 12	A train overran the platform of a station on the journey the length of a coach, in consequence of the failure of the vacuum valve on engine caused by a washer having been drawn into it. 1 minute delay.	98,440 trains.

1. Name of Railway Company.	2. Name or Description of brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 30.	5. Number of Miles run by Trains fitted with Continuous Brakes.
Metropolitan— <i>cont.</i>	Smith's Vacuum Brake— <i>cont.</i>	March 27	A train overran the platform of a station on the journey the length of two coaches, in consequence of the air valve on engine failing through a piece of waste getting into it. 1 minute delay. Driver fined.	
		April 12	A train overran the platform of a station on the journey the length of two coaches, in consequence of the union nut of vacuum pipe under foot-plate coming uncoupled. Neglect of driver. Driver fined. 2 minutes delay.	
		June 1	A train overran the platform of a station on the journey its whole length, in consequence of the boiler of the engine being too full of water. 9 minutes delay. Driver fined.	
			<i>3. Delay in the working of trains in consequence of defects in or improper action of the brakes.</i>	
		Jan. 2	On arriving at a station on the journey the brake failed to act, in consequence of the vacuum sack bursting. Wear and tear. 2 minutes delay, changing engine.	
		April 19	The brake failed to act on the journey in consequence of a vacuum sack bursting. Wear and tear. 2 minutes delay, changing engine.	
		June 22	On arriving at a station on the journey the brake failed to act, in consequence of a vacuum sack bursting. Wear and tear. 2 minutes delay, changing engine.	
Metropolitan District -	- - -	No failures reported, and no delay calling for special remarks.	—	Westinghouse Air Pressure Brake. 756,226 miles.
Midland -	Westinghouse Automatic Air Brake. (46 engines fitted. See Return No. 1, page 18.)		1 and 2. Nil.	7,764 miles.
		Jan. 6	6.5 p.m. train from Morecambe to Leeds. 19 minutes delay in running and at Bentham, owing to air pump on engine No. 809 ceasing to work through upper piston valve head coming off, and hand-brakes only could be worked to Skipton.	
		Feb. 7	2.15 a.m. train from Leeds to Carlisle. 4 minutes delay at Settle junction. Train had to be stopped to release and disconnect brake on tender No. 1305, owing to iron pipe to triple valve breaking.	
		„ 18	9.50 p.m. special express train from Carlisle to Bournemouth. 43 minutes delay in running from King's Heath and at Wickwar, owing to spring of driver's valve on engine No. 818 breaking, and hand-brakes only could be worked from Wickwar to Bath.	

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Midland— <i>cont.</i>	Westinghouse Automatic Air Brake— <i>cont.</i>	April 2	12.20 a.m. train from Carlisle to Manches- ter. 2 minutes delay at Long Marton. Train was stopped by stop cock in front of engine No. 1577 opening itself, owing to the spring becoming weak.	6,539,807 miles.
		" 19	12.8 a.m. train from Carlisle to St. Pancras. 2 minutes delay at Oakenshaw. Train had to be stopped to release brake from engine No. 818, its triple valve sticking.	
		May 15	12.8 a.m. train from Carlisle to St. Pan- cras. 7 minutes delay at Dent. Train had to be stopped twice to release brake from Midland Scotch Joint Stock com- posite No. 36, its triple valve sticking.	
		" 31	8.50 p.m. North-Eastern excursion train from Hull to Menston. 10 minutes delay in running and at Esholt junction, where brake stopped train owing to air pump of Midland engine No. 817 ceasing to work. Neglect of driver.	
	Vacuum Automatic Brake. (967 engines fitted. See Return No. 1, page 18.)		1 and 2. Nil.	
			3. <i>Delay in the working of trains in con- sequence of defects in or improper action of the brakes.</i>	
		Jan. 3	4.55 p.m. train from Annesley to Mansfield. 3 minutes delay at Kirkby, owing to hose-pipe of engine No. 1651 becoming defective.	
		" 7	11.5 a.m. train from Leeds to Sheffield. 6 minutes delay at Hunslet, discon- necting defective hose-pipe on Great Western fish truck No. 655.	
		" 11	6.20 p.m. train from Nottingham to Lin- coln. 5 minutes delay in running to Lincoln, owing to piston rod of van No. 380 being fitted too tightly in bush.	
		Feb. 21	1.36 p.m. train from Leeds to Bradford. 4 minutes delay at Armley and Apperley by brake not releasing quickly, owing to leakage on third-class composite carriage No. 799.	
		March 3	5.20 p.m. train from Manchester to London. 29 minutes delay—14 in running and at Haddon signals, by brake not releasing quickly after appli- cation, and 11 minutes at Derby examin- ing brake, some ice and water being found in pipes of second vehicle (van No. 522), and brake was worked from Derby to London on first vehicle only.	5,151,563½ miles.
		June 25	8.30 a.m. train from Carlisle to Leeds. 12 minutes delay at Crosby Garrett and at Kirkby Stephen examining train. Leakage on van No. 223.	
North-Eastern	The Westing- house Auto- matic Brake (439 engines fitted. See Return No. 1 page 20.)	Jan. 18	8.0 p.m. train, Bishop Auckland to Durham, engine No. 1444. Overran the plat- form at Hunwick; the 1-inch cock between engine and train was shut. Neglect of servants.	

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North-Eastern— <i>cont.</i>	The Westing- house Auto- matic Brake — <i>cont.</i>	Jan. 21	9.20 a.m. train, Scarbro' to York, engine No. 162. Overran the platform at Strensall, the donkey pump not working; the nut on lower main piston rod faulty.	
		Feb. 11	3.45 p.m. train, Leeds to Thirsk, engine No. 459. Overran the platforms at Weeton and Headingley. Donkey pump failed; the lower head of main piston valve broken.	
			3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i>	
		Jan. 9	4.30 p.m. train, Leeds to Newcastle, engine No. 53. 5 minutes at Leeds. Driver could not get the required air pressure, owing to two hose couplings not being properly coupled.	
		" 13	4.0 p.m. train, Newcastle to York, engine No. 1476. 6 minutes between Alne and Tollerton. The air pipe connecting donkey pump and main reservoir on the engine broken at the reservoir end.	
		" 14	2.50 p.m. train, Edinbro' to York, engines Nos. 1519 and 853. 6 minutes between Belford and Lucker, the brake being on upon East Coast composite carriage No. 133. Fault of driver.	
		" 22	9.23 a.m. train, Darlington to Richmond, engine No. 297. 3 minutes between Catterick and Richmond. Hose-pipe on L. & N.-W. horse-box No. 63 burst.	
		" 22	6.15 p.m. train, Carlisle to Newcastle, engine No. 640. 18 minutes at Wetheral, the main pipe giving way underneath horse-box No. 132. The horse-box was shunted from front to rear of train, causing delay.	
		" 24	9.30 a.m. train, Newcastle to York, engine No. 1472. 4 minutes between Preston-le-Skerne and Aycliffe. Hose-pipe on Midland composite carriage No. 350 burst.	
		" 24	2.50 p.m. train, Edinbro' to York, engine No. 1473. 6 minutes at Sessay Wood. Hose-pipe on Midland van No. 487 burst.	
		Feb. 3	6.55 p.m. train, Saltburn to Darlington, engine No. 844. 7 minutes at Middlesbro', donkey pump stopping, reversing valve plate, screw working loose.	
		" 11	12.20 p.m. train, York to Newcastle, engine No. 1473. 2 minutes at Poppleton junction. Hose-pipe on Great Northern horse-box No. 1182 burst.	
		" 15	4.50 a.m. train, Newcastle to Tynemouth, engine No. 1160. 3 minutes between North Shields and Tynemouth, the hose-pipes between the engine and carriage truck No. 22 becoming disconnected, not having been properly coupled.	
		" 15	10.0 a.m. train, Normanton to York, engine No. 451. 2 minutes lost by donkey pump stopping; nut on lower main piston valve slacked back.	

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North-Eastern— <i>cont.</i>	The Westing- house Auto- matic Brake — <i>cont.</i>	Feb. 17	7.35 p.m. train, Edinbro' to Newcastle, engine No. 362. 12 minutes lost between Edinbro' and Berwick, the hand-brakes having to be used; the steam-pipe nipple of donkey pump on engine broken.	
		„ 22	1.35 p.m. train, Sunderland to Hartlepool, engine No. 288. 2 minutes at West Hartlepool by a leak in the main reservoir, caused by the bogie of engine coming in contact with it.	
		„ 24	5.0 p.m. train, Tynemouth to Newcastle, engine No. 846. 6 minutes lost by the pump stopping through an accumulation of dirt. The hand-brakes were used.	
		March 14	7.45 p.m. train, Newcastle to Morpeth, engine No. 139. 10 minutes lost between Benton and Backworth, the nut on the air-pipe from donkey pump to main reservoir slacked back, causing a leak.	
		„ 24	2.49 a.m. train, Normanton to York, engine No. 551. 2 minutes at Milford junction. The hose-pipe on Midland composite carriage No. 582 burst.	
		„ 26	2.5 p.m. train, Hull to Hornsea, engine No. 296. 6 minutes at Hull. The steam-pipe nipple blown out of donkey pump, the thread of the nipple having been stripped.	
		„ 27	7.45 p.m. train, Withernsea to Hull, engine No. 1828. 3 minutes lost between Keyingham and Hull. The donkey pump stopped; governor spring broken.	
		„ 27	9.28 p.m. train, York to Normanton, engine No. 25. 3 minutes at York. Hose-pipe on Midland Post Office van No. 80 burst.	
		„ 28	6.20 p.m. train, York to Newcastle, engine No. 1463. 1 minute at Northallerton. Hose-pipe on Midland van No. 487 burst.	
		April 5	1.0 p.m. train, York to Scarbro', engine No. 464. 2 minutes at Barton Lane, the brake being on upon third-class carriage No. 1125. Neglect of driver.	
		„ 7	8.0 p.m. train, Newcastle to Middleton, engine No. 204. 7 minutes at Plawsworth, the brake being on upon third-class carriage No. 85. Fault of driver.	
		„ 11	1.8 a.m. train, York to Edinbro', engine No. 365. 7 minutes at York, owing to a leak in the hose coupling on East Coast sleeping carriage No. 105 by the india-rubber washer being defective.	
		„ 26	3.45 p.m. train, Leeds to Thirsk, engine No. 1847. 2 minutes at Baldersby. Hose-pipe on London and North-Western horse-box No. 151 burst.	
		May 8	4.55 p.m. train, Scarbro' to Leeds, engine No. 1441. 2 minutes at Flaxton, the brake being on upon front van No. 62. Fault of driver.	
		„ 9	10.0 a.m. train, York to Edinbro', engine No. 1,474. 2 minutes at Gateshead, the brake being on upon East Coast composite No. 128; defective top valve spring in driver's brake valve.	
		„ 12	10.0 a.m. train, Edinbro' to York, engine No. 850. 2 minutes at Loughirst, brake being on upon East Coast composite carriage No. 139. Fault of driver.	

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North-Eastern— <i>cont.</i>	The Westing- house Auto- matic Brake — <i>cont.</i>	May 17	2.50 p.m. train, Edinbro' to York, engine No. 340. 9 minutes lost owing to a leak at the running socket of main pipe on engine. Fault of fitter.	
		" 19	6.20 a.m. train, Carlisle to Newcastle, engine No. 1492. 3 minutes at Widehaugh, the brake being on upon composite carriage No. 2688. Top valve spring of driver's valve defective. Neglect of driver.	
		" 20	6.20 p.m. train, Hull to Scarbro', engine No. 557. 10 minutes lost owing to the donkey pump stopping at Beverley, the nut on the lower main valve having worked loose.	
		" 24	5.21 p.m. train, Newcastle to Edinbro', engine No. 848. 14 minutes at Reston junction detaching North - Eastern third-class carriage No. 2089, the brake having been on upon it, caused by a leak at the hose coupling washer on the engine.	
		" 26	10.45 p.m. train, Leeds to Newcastle, engine No. 777. 6 minutes lost. The air pipe from donkey pump to main reservoir broken at the union joint at the reservoir end. Defective brazing.	
		June 3	5.3 p.m. train, Sunderland to Bishop Auckland, engine No. 1348. 4 minutes lost, donkey pump not making a pressure of air, the air-pipe from the pump to main reservoir being blocked with dirt and grease. Fault of driver not using proper lubricant.	
		" 5	11.15 a.m. train, Scarbro' to Hull, engine No. 675. 6 minutes lost from Bampton to Hull by the donkey pump stopping; one of the bolts in the reversing valve plate broken. Defective material.	
		" 6	11.55 a.m. train, Sunderland to South Shields, engine No. 614. 6 minutes lost by donkey pump stopping, the head of the upper main piston valve having worked loose.	
		" 10	11.35 a.m. train, Harrogate to Leeds, engine No. 689. 2 minutes between Pannal and Weeton. Hose-pipe on Midland horse-box No. 172 burst.	
		" 11	1.8 a.m. train, York to Edinbro', engine No. 156. 2 minutes at York. Hose-pipe on Great Northern third-class carriage No. 530 burst.	
		" 12	4.55 p.m. train, North Road to Darlington, engine No. 1101. 2 minutes at North Road, the brake being on upon the front portion of the train (numbers of vehicles not taken). The engine which had previously worked the train had left it charged with a higher pressure than could be made by engine No. 1101.	
		" 16	11.55 a.m. train, Middlesbro' to Saltburn, engine No. 1115. 3 minutes at Middlesbro', the brake being on upon composite carriage No. 995. Fault of driver.	
		" 16	2.50 p.m. train, Edinbro' to York, engine No. 1520. 5 minutes between Cockburnspath and Grant's House. Hose-pipe on North British waggon No. 14,608 burst.	
		No failures reported.		
				Vacuum Auto- matic Brake. 3,251 miles.

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
North London -	Clark and Webb's Chain Brake. (84 engines fitted. See Return No. 1, page 20.)	March 19 June 30	1 and 2. Nil. <i>3. Delay in the working of trains in consequence of defects in or improper action of the brakes.</i> Six minutes at Broad Street, owing to brake-rod breaking on brake-van No. 13. Failure of material. One minute at Abbey Mills, owing to brake working on on brake-van No. 11. Neglect of engineman.	895,183 miles.
North Staffordshire -	- - -	No failures reported.	—	Vacuum Brake. 388,650 miles. Automatic Vacuum 133,800 miles.
Pontypridd, Caerphilly, and Newport.	- - -	No failures reported.	—	Fay's Brake. 4,700 miles.
Rhondda and Swansea Bay.	- - -	No failures reported.	—	Automatic Vacuum 13,456 miles.
Rhymney -	- - -	No failures reported.	—	Westinghouse Automatic Brake. 85,024 miles.
Seacombe, Hoylake, and Deeside.	- - -	No failures reported.	—	Automatic Vacuum Brake. 75,279 miles.
Severn and Wye and Severn Bridge.	- - -	No failures reported.	—	Clark's Chain Brake. 32,159 miles.
Somerset Joint Com- mittee.	- - -	No failures reported.	—	Vacuum Automatic Brake. 245,148 miles.
South-Eastern -	Simple Vacuum Brake. (68* engines fitted. See Return No. 1, page 24.)	Jan. 20 Feb. 9 March 2 " 13	1. Nil. <i>2. Failure or partial failure to act under ordinary circumstances to stop a train when required.</i> The 4.45 p.m. Cannon Street to Blackheath train overran E F signals at London Bridge two carriage lengths. A carriage examiner had neglected to couple up the connecting pipes at the end of No. 1945 third-class carriage. The 8.52 p.m. Woolwich Arsenal to Charing Cross train overran Woolwich Dockyard platform two carriage lengths. The brake pipes on front of engine No. 325 had become uncoupled in consequence of not having been properly coupled up. The 9.10 a.m. Charing Cross to Port Victoria train overran London Bridge platform two carriage lengths, owing to the brake-hose between engine and tender (No. 92) having become disconnected. The 10.35 p.m. Woolwich to Charing Cross train overran Borough Market signals about 30 yards, owing to the brake not acting. Driver had opened the flap-valve of brake (engine No. 115) at London Bridge, and had neglected to close it.	2,703,112 miles.

* Exclusive of the engines also fitted to work automatic vacuum braked trains.

1. Name of Railway Company.	2. Name or Descrip- tion of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of miles run by Trains fitted with Continuous Brakes.
South-Eastern—cont.	Simple Vacuum Brake—cont.	April 7	The 11.35 p.m. up Dartford train overran Blackheath platform the length of the train, owing to the brake pipes between engine No. 177 and luggage van No. 147 having become disconnected. The cause of the pipes becoming disconnected could not be discovered.	(Included in mileage of the simple vacuum brake.)
		" 7	The 4.50 p.m. Woolwich to Charing Cross train overran Waterloo platform the length of the train, owing to the brake not acting. It is supposed that the shunter, in coupling up the simple brake pipes at Cannon Street, accidentally knocked the automatic pipe off the dummy on engine No. 351, as the pipe was found to be off the dummy at Waterloo.	
		June 24	The 6.10 p.m. Dover to Minster train overran Dover Harbour station four carriage lengths, owing to the brake pipes between engine and tender (No. 249) having become separated, the pipes not having been properly coupled together.	
			3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i>	
	Automatic Vacuum Brake. (178 engines fitted. See Return No. 1, p. 24.)	March 3	The 5.0 p.m. up Gravesend train lost seven minutes between Northfleet and Greenhithe, owing to the brake blocks bearing upon the whole of two carriages. The two carriages next the engine were fitted with the automatic brake, with "simple" through pipes, and the shunter had by mistake coupled up the "automatic" instead of the "simple" pipes to the engine.	
			1 and 2. Nil.	
			3. <i>Delay in the working of trains in consequence of defects in or improper action of brakes.</i>	
		Jan. 2	The 3.20 p.m. up Blackheath train was delayed six minutes at Cannon Street, owing to engine No. 306 being unable to start the train. It was found that there was a leakage at the brake pistons on several of the carriages.	
		" 6	The 10.32 p.m. down Tunbridge train was delayed eight minutes at Charing Cross, owing to engine No. 79 being unable to move the train. The train was fitted with the automatic brake, and the driver had set the converting cocks on the engine to work the simple vacuum brake.	
		" 11	The 2.35 p.m. Hastings to Charing Cross train was pulled up after leaving Cannon Street, owing to the brake going on. The engine (No. 270) and train were afterwards examined and found in perfect order. The train was delayed three minutes.	
		" 25	The 9.55 p.m. up Sevenoaks train was delayed two minutes at London Bridge, in consequence of the thread of iron pipe which connected the hose between the engine and tender (No. 228) having stripped, and allowed the pipe to come out.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
South-Eastern— <i>cont.</i>	Vacuum Automatic Brake — <i>cont.</i>	Feb. 5	The 8.40 a.m. down Dover mail was pulled up outside Cannon Street by the brake, and delayed two minutes, owing to a leakage in the train. The engine (No. 352) and the train were afterwards examined, and found to be in perfect order.	
		" 24	The 5.45 p.m. up Brussels express was delayed three minutes at Cannon Street, owing to engine No. 273 being unable to take the brake off the train. The shunter had not placed the hose-pipe of the rear van (No. 285) properly on the dummy.	
		March 4	The 7.35 a.m. Dover to Charing Cross train was delayed six minutes at Orpington, in consequence of the driver, after applying the brake to stop, being unable to release it on engine No. 104, and having to disconnect the brake on the engine. The cause was not discovered.	
		" 13	The 5.35 p.m. down Hastings train was delayed five minutes at Tunbridge Wells releasing the brake on the train, a collar having broken off the vacuum chamber connection pipe on the tender of engine No. 251.	
		" 14	The 1.55 a.m. up Dover mail was stopped at Shorncliffe, owing to the brake blocks bearing on the wheels of the rear van (No. 207). The brakes were released, and the train proceeded with the hand brakes. The engine (No. 114) and the train were afterwards examined, and found in perfect order. Delay to train, five minutes.	
		" 28	The 7.25 a.m. Charing Cross to Tunbridge train lost five minutes on the journey, owing to the brake blocks rubbing on the wheels. The hose-pipe in front of engine No. 221 had not been properly on the dummy, and there was a leakage in consequence.	
		April 23	The 4.10 p.m. up Dover train was delayed four minutes on the journey after leaving Edenbridge, owing to the brake blocks bearing on the wheels. First-class carriage No. 1860 had been attached to the train at Edenbridge, and the absence of a washer in one of the brake couplings of this carriage caused a leakage.	
		May 23	The second portion of the 10.0 a.m. down Folkestone express lost five minutes on the journey, owing to a leakage in the brake on the train. It is supposed that the brake was not properly coupled up at Cannon Street, as it was found to be in perfect order on examination.	
		" 27	The 3.0 p.m. Ramsgate to Margate train was delayed five minutes between these stations. The train was fitted with the automatic brake, and the driver had set the connecting cocks of his engine (No. 57) to work the simple vacuum brake.	
		June 3	The 7.0 a.m. Charing Cross to Erith train was delayed two minutes at Deptford, owing to engine No. 129 being unable to keep the brake blocks from rubbing on the wheels. This was caused by a leakage at the brake piston packing rings of the engine.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes
South-Eastern— <i>cont.</i>	Vacuum Auto- matic Brake — <i>cont.</i>	June 3	The 12.15 p.m. down Dover train was delayed five minutes at Charing Cross in consequence of the brake blocks bearing on the engine (No. 233) wheels. The train was fitted with the automatic vacuum, and the fireman had by mistake set the converting cocks on the engine to work the simple brake.	
		„ 28	The 1.50 p.m. up Margate train was delayed four minutes at Ramsgate. The driver had stopped the train with the vacuum gauge registering 19 inches, and when he endeavored to start he had only 15 inches vacuum, and getting confused did not use the large ejector, and caused the delay.	
Taff Vale	- - -	No failures reported.	—	Smith's Auto- matic Vacuum Brake. 172,762 miles.
West Lancashire	- - -	No failures reported.	—	Westinghouse Au- tomatic Brake. 113,198 miles.
Wrexham, Mold, and Connah's Quay.	- - -	No failures reported.	—	Clark and Webb's Chain Brake. 8,733 miles.
SCOTLAND.				
Ayrshire and Wig- townshire.	- - -	No failures reported.	—	Westinghouse. 23,598 miles.
Caledonian	Westinghouse Automatic Brake. (308 engines fitted. See Return No. 1, page 26.)	Jan. 3	1 and 2. Nil. 3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i> 4.45 p.m. Dundee to Montrose delayed 4 minutes at Elliot junction. Cause: hose-pipe bursting on Caledonian composite carriage No. 7.	2,993,357 miles.
		„ 4	11.10 a.m. Glasgow to Hamilton delayed 1 minute at Blantyre. Cause: hose-pipe bursting on Caledonian brake carriage No. 58.	
		„ 6	9.15 p.m. Glasgow to Coatbridge delayed 6 minutes between Mount Vernon and Baillieston. Cause: hose-pipe bursting on Caledonian third-class carriage No. 88.	
		„ 16	9.25 p.m. Glasgow to Dundee delayed 6 minutes near Bridge of Allan. Cause: hose-pipe bursting on Caledonian engine No. 33.	
		Feb. 20	3.40 p.m. Aberdeen to Perth delayed 7 minutes at Stonehaven. Cause: hose-pipe bursting on Caledonian fish truck No. 6409.	
		„ 28	9.0 a.m. Aberdeen to Perth delayed 2 minutes at Stonehaven. Cause: hose-pipe bursting on London and North-Western cattle van No. 49,616.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
Caledonian—cont.	Westinghouse Automatic Brake—cont.	March 1	4.50 p.m. Gourrock to Glasgow delayed 8 minutes at Langbank. Cause: hose-pipe bursting on Caledonian engine No. 82.	
		" 3	9.0 p.m. Braidwood to Coatbridge delayed 5 minutes at Carluke. Cause: hose-pipe bursting on Caledonian brake carriage No. 613.	
		" 4	9.15 a.m. Carlisle to Glasgow delayed 4 minutes between Gretna and Kirkpatrick. Cause: hose-pipe bursting on Caledonian brake-van No. 76.	
		" 5	3.40 p.m. Aberdeen to Perth delayed 7 minutes between Bridge of Dun and Farnell Road. Cause: hose-pipe bursting on Great North of Scotland fish truck No. 2253.	
		April 9	4.45 p.m. Dundee to Guthrie delayed 3 minutes at Arbroath. Cause: hose-pipe bursting on Caledonian brake-van No. 149.	
		" 10	11.55 a.m. Perth to Glasgow delayed 4 minutes near Dunning. Cause: hose-pipe bursting on West Coast Joint Stock meat van No. 234.	
		" 14	11.30 a.m. Perth to Aberdeen delayed 2 minutes at Stanley. Cause: hose-pipe bursting on Caledonian brake-van No. 160.	
		" 14	12.35 p.m. Glasgow to Gourrock delayed 4 minutes at Bishopton, Port Glasgow, and Bogston. Cause: defective hose-pipe obstructing passage of air on Caledonian engine No. 483.	
		May 5	9.15 a.m. Dumfries to Lockerbie delayed 5 minutes between Amisfield and Shieldhill. Cause: hose-pipe bursting on Caledonian engine No. 419.	
		" 13	4.23 p.m. Glasgow to Wemyss Bay delayed 2 minutes at Bishopton tunnel. Cause: hose-pipe bursting on Caledonian second-class carriage No. 759.	
		" 17	9.15 a.m. Carlisle to Glasgow delayed 4 minutes between Elvanfoot and Crawford. Cause: hose-pipe bursting on Caledonian first-class carriage No. 194.	
		" 23	1.17 p.m. Carlisle to Perth delayed 7 minutes between Auchencastle and Greskine. Cause: hose-pipe bursting on West Coast Joint Stock brake-van No. 98.	
		" 26	9.5 a.m. Bothwell to Glasgow delayed 4 minutes at Uddingston. Cause: hose-pipe bursting on Caledonian engine No. 223.	
		June 16	9.30 a.m. Glasgow to Perth delayed 4 minutes at Stirling. Cause: failure of reversing valve spindle of air-pump on Caledonian engine No. 129.	
		No failures reported.	—	Steel McInnes Automatic Brake. 48,224 miles.

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
Glasgow and South-Western.	Westinghouse Automatic Brake. (94 engines fitted. See Return No. 1, page 26.)		1. Nil.	579,362 miles.
			2. <i>Failure or partial failure to act under ordinary circumstances to stop a train when required.</i>	
		Jan. 10	Train partly overran Newton-on-Ayr platform, caused by cock being shut on vehicle in front of train. Servants at fault.	
		March 24	Train partly overran Dalrymple platform, caused by cock being shut on tender of engine No. 157. Servants at fault.	
		April 30	Train partly overran Cassillis platform, caused by cock being shut on vehicle in front of train. Delay 6 minutes. Servants at fault.	
			3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i>	
		Jan. 6	Train delayed 7 minutes near Dromore by a hose-pipe bursting on composite carriage No. 47.	
		Feb. 27	Train delayed 2 minutes at Elderslie by hose-pipes uncoupling between engine No. 1 and third-class carriage No. 205. Servants at fault.	
		March 5	Train delayed 5 minutes at Dumfries by a burst hose-pipe on tender of engine No. 152.	
		" 13	Train delayed 5 minutes on journey by the air-pump of engine No. 119 not working properly.	
		" 19	Train delayed 3 minutes at Gallowhill by a hose-pipe bursting on brake-van No. 76.	
		" 19	Train delayed 4 minutes at Elderslie by a hose-pipe bursting on third-class carriage No. 376.	
		April 3	Train delayed 3 minutes at Port Eglinton by a hose-pipe bursting on brake-van No. 81.	
		" 3	Train delayed 8 minutes near Kilmalcolm by the reservoir pipe of engine No. 125 failing.	
		May 10	Train delayed 2 minutes at Stoneybrae by the brake binding on third-class carriage No. 319.	
		" 27	Train delayed 2 minutes near Greenock by a hose-pipe bursting on first-class carriage No. 49.	
		" 27	Train delayed 2 minutes at Paisley by the brake binding on first-class carriage No. 73 and third-class carriage No. 120.	
		June 3	Train delayed 2 minutes at Stoneybrae by a hose-pipe bursting on brake-van No. 75.	
		" 3	Train delayed 2 minutes near Kilwinning by a hose-pipe bursting on third-class carriage No. 451.	
		" 3	Train delayed 4 minutes at St. Enoch by a hose-pipe bursting on tender of engine No. 15.	
		" 28	Train delayed 3 minutes near Kilmalcolm by an air pipe coupling-nut of engine No. 128 slackening back.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
Glasgow and South- Western—cont.	Vacuum Automatic Brake. (51 engines fitted. See Return No. 1, page 26.)	Jan. 7 Feb. 2 " 8 June 26	1 and 2. Nil. 3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i> Train delayed 20 minutes at Ruthwell by the brake gear jamming on first-class carriage No. 99. Train delayed 5 minutes at Auldgirth by the brake binding on Post Office van No. 18 and Midland carriage truck No. 2. Train delayed 5 minutes at Crossmyloof by the brake binding on train. Servants at fault. Train delayed 5 minutes at Kilmarnock by the brake binding on third-class carriage No. 428. Servants at fault.	839,594 miles.
Great North of Scotland	Westinghouse Automatic Brake. (49 engines fitted. See Return No. 1, page 26.)	March 7	1 and 2. Nil. 3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i> 7.15 a.m. up Brechan train stopped between Logierieve and Udney, in consequence of one of the Westinghouse hose-pipes on passenger brake-van No. 24 bursting. 3 minutes detention to train releasing brakes by hand cords.	276,049½ miles
Highland - - -	Automatic Vacuum Brake. (57 engines fitted. See Return No. 1, p. 26.)	April 26 No failures reported.	1 and 2. Nil. 3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i> On 7.50 a.m. down train the small pipe leading from train pipe to engine brake cylinder broke when approaching Kingussie, and the brake was leaked off the carriages there, and train ran to Inverness in this condition. —	251,386 miles. Newall's Continuous Hand Brake. 216,621 miles.
North British - - -	Westinghouse Automatic Air Brake. (215 engines fitted. See Return No. 1, page 28.)	Feb. 5 " 8 " 11 " 11	1 and 2. Nil. 3. <i>Delay in the working of trains in consequence of defects in or improper action of the brakes.</i> Passenger train, Airdrie to Hyndland, detained 6 minutes on journey by reversing piston-rod breaking on engine No. 591. Failure of material. Passenger train, Edinburgh to Glasgow, detained 3 minutes at Edinburgh by governor-pipe breaking on engine No. 474. Failure of material. Passenger train, Milngavie to College, detained 5 minutes at Milngavie junction by hose-pipe bursting on carriage No. 15. Failure of material. Passenger train, Hyndland to Hamilton, detained 7 minutes on journey by failure of air-pump piston on engine No. 88. Failure of material.	2,924,754 miles.

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
North British— <i>cont.</i>	Westinghouse Automatic Air Brake— <i>cont.</i>	Feb. 15	Passenger train, Hamilton to Hyndland, detained 19 minutes on journey by failure of air-pump on engine No. 591. Failure of machinery.	
		" 17	Passenger train, Hyndland to Hamilton, detained 3 minutes at Hyndland by piston-ring breaking on engine No. 587. Failure of material.	
		" 17	Passenger train, Aberdeen to Burntisland, detained 4 minutes at Ladybank by piston-ring breaking on engine No. 594. Failure of material.	
		" 17	Passenger train, Helensburgh to College, detained 8 minutes between Dumbarton and Bowling by air-pipe breaking on third-class carriage No. 927. Failure of material.	
		" 21	Passenger train, Edinburgh to Carlisle, detained 3 minutes near Harker by hose-pipe bursting on fish waggon No. 2444. Failure of material.	
		" 22	Passenger train, Airdrie to Hyndland, detained 13 minutes on journey by air-pump failing on engine No. 591. Failure of machinery.	
		March 15	Passenger train, Glasgow to Edinburgh, detained 5 minutes at Linlithgow owing to nut of air-pipe having become slack on engine No. 574. Failure of workmanship.	
		" 19	Passenger train, Edinburgh to Alloa, detained 5 minutes at Philpstoun by hose-pipe bursting on horse-box No. 143. Failure of material.	
		" 29	Passenger train, Carlisle to Edinburgh, detained 4 minutes at Lyneside by hose-pipe bursting on Midland Railway horse-box No. 333. Failure of material.	
		April 3	Passenger train, Carlisle to Edinburgh, detained 4 minutes at Newcastleton by hose-pipe bursting on Midland Railway carriage No. 425. Failure of material.	
		" 3	Passenger train, Carlisle to Edinburgh, detained 5 minutes at Carlisle by hose-pipe bursting on fish truck No. 1822. Failure of material.	
		" 7	Passenger train, Hyndland to Airdrie, detained 5 minutes at Hyndland by piston-ring breaking on engine No. 587. Failure of material.	
		" 12	Passenger train, Berwick to Edinburgh, detained 4 minutes between Berwick and Burnmouth by hose-pipe bursting on horse-box No. 130. Failure of material.	
		" 14	Passenger train, Helensburgh to College, detained 3 minutes at Partick by hose-pipe bursting on carriage-truck No. 28. Failure of material.	
		" 16	Passenger train, Edinburgh to Hyndland, detained 4 minutes on journey by air-pump failing on engine No. 234. Failure of machinery.	
		" 21	Passenger train, Hyndland to Hamilton, detained 3 minutes on journey by air-pump failing on engine No. 586. Failure of machinery.	
		" 22	Passenger train, Dundee to Burntisland, detained 4 minutes between Leuchars junction and Dairsie by hose-pipe bursting on carriage No. 308. Failure of material.	

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
North British— <i>cont.</i>	Westinghouse Automatic Air Brake— <i>cont.</i>	May 6	Passenger train, Musselburgh to Edinburgh, detained 5 minutes at New Hailes by hose-pipe bursting on brake-van No. 655. Failure of material.	
		" 8	Passenger train, Hyndland to Airdrie, detained 5 minutes at Caldercruix by air-pipe breaking on engine No. 237. Failure of material.	
		" 15	Passenger train, Edinburgh to Glasgow, detained 4 minutes at Croy by hose-pipe bursting on goods brake-van No. 356. Failure of material.	
		" 16	Passenger train, Glasgow to Edinburgh, detained 4 minutes at Greenhill through main air-pipe breaking on carriage No. 1008. Failure of material.	
		" 17	Passenger train, Collee to Helensburgh, detained 4 minutes at Garscadden by air-pipe breaking on third-class carriage No. 346. Failure of material.	
		" 17	Passenger train, Edinburgh to Carlisle, detained 3 minutes between Kershopefoot and Penton by hose-pipe bursting on Midland Scotch Joint Stock van No. 22. Failure of material.	
		" 20	Passenger train, Carlisle to Edinburgh, detained 5 minutes at Belses by hose-pipe bursting on Midland Railway horse-box No. 132. Failure of material.	
		" 20	Passenger train, Edinburgh to Dalkeith, detained 9 minutes at Edinburgh, East, through a relief cock breaking on brake-van No. 747. Failure of material.	
		" 27	Passenger train, Carlisle to Edinburgh, detained 4 minutes at Longtown by hose-pipe bursting on composite carriage No. 213. Failure of material.	
		" 27	Passenger train, Hyndland to Hamilton, detained 7 minutes on journey by air-pump failing on engine No. 589. Failure of machinery.	
		" 31	Passenger train, Bellgrove to Milngavie, detained 4 minutes at Springburn by hose-pipe bursting on third-class carriage No. 616. Failure of material.	
		June 3	Passenger train, Edinburgh to Aberdeen, detained 3 minutes at Stonehaven by hose-pipe bursting on Midland Railway carriage No. 201. Failure of material.	
		" 4	Passenger train, Carlisle to Edinburgh, detained 6 minutes between Carlisle (Canal Station) and Harker by hose-pipe bursting on Midland Railway carriage No. 21. Failure of material.	
		" 4	Passenger train, Edinburgh to Glasgow, detained 6 minutes at Waterside through handle of cock falling down and allowing air to escape inside special passenger van No. 356. Failure of workmanship.	
		" 7	Passenger train, Edinburgh to Carlisle, detained 6 minutes at Galashiels by hose-pipe bursting on Midland Railway composite carriage No. 56. Failure of material.	
		" 8	Passenger train, Edinburgh to Aberdeen, detained 3 minutes at Inverkeithing by hose-pipe bursting on East Coast Joint Stock composite carriage No. 65. Failure of material.	
		" 16	Passenger train, Edinburgh to Berwick, detained 5 minutes near Grantshouse by hose-pipe bursting on fish truck No. 14,608. Failure of material.	

1. Name of Railway Company.	2. Name or Descrip- tion of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
North British— <i>cont.</i>	Westinghouse Automatic Air Brake— <i>cont.</i>	June 18	Passenger train, Edinburgh to Aberdeen, detained 3 minutes at Kirkcaldy by hose-pipe bursting on East Coast Joint Stock composite carriage No. 135. Failure of material.	
		" 18	Passenger train, Stirling to Glasgow, detained 4 minutes at Carmuir's junc- tion by air-pipe breaking on engine No. 239. Failure of material.	
		" 20	Passenger train, Edinburgh to Perth, detained 4 minutes at Haymarket by hose-pipe bursting on Midland Scotch Joint Stock carriage No. 33. Failure of material.	
		" 23	Passenger train, Hamilton to Hyndland, detained 9 minutes on journey through double piston valve of air-pump failing on engine No 88. Failure of machinery.	
		" 24	Passenger train, Edinburgh to Perth, detained 3 minutes at Haymarket by hose-pipe bursting on Midland Railway carriage No. 340. Failure of material.	
		" 25	Passenger train, Glasgow to Edinburgh, detained 7 minutes at Cowlares by hose- pipe bursting on yeast van No. 21,174. Failure of material.	
		" 26	Passenger train, Airdrie to Hyndland, detained 6 minutes on journey by air- pump failing on engine No. 588. Failure of machinery.	
IRELAND.				
Belfast and Northern Counties.	Vacuum Auto- matic Brake. (37 engines fitted. See Return No. 1, page 28.)	June 20	1 and 2. Nil. 3. <i>Delay in the working of trains in con- sequence of defects or of improper action of the brakes.</i> The 3.0 p.m. train lost six minutes at Coleraine and seven minutes at Bally- money owing to brake blocks binding on wheels of van No. 1103. Cause not ascertained.	273,888 miles.
		No failures reported.	—	Smith's Vacuum Brake. 35,639 miles.
Castlederg and Victoria Bridge Tramway Company.	- - -	No failures nor instance of delay reported.	—	Westinghouse Automatic Brake. 8,608 miles.
Cavan, Leitrim, and Roscommon Light Railway and Tram- way Company, Li- mited.	- - -	No failures reported.	—	Automatic Vacuum Brake. 46,813 miles.
Cork and Muskerry Light.	- - -	No failures reported.	—	Automatic Va- cuum Brake. 35,328 miles.

1. Name of Railway Company.	2. Name or Description of Brake which failed or caused delay.	3. Date of Failure.	4. Particulars of Circumstances relating to the Cause of Failure, &c. under the three headings given on page 34.	5. Number of Miles run by Trains fitted with Continuous Brakes.
Dublin, Wicklow, and Wexford.	Simple Vacuum Brake. (46 engines fitted. See Return, No. 1, page 30.)	Feb. 2 June 13	1. Nil. 2. <i>Failure or partial failure to act under ordinary circumstances to stop a train when required.</i> 4.30 p.m. from Harcourt Street to Bray passed Foxrock station three carriage lengths through vacuum pipe getting uncoupled between No. 4 third-class carriage and No. 67 third brake-van. The 10.0 a.m. from Kingstown to West- landrow passed Blackrock station (ten carriages) through vacuum pipe getting uncoupled between No. 43 third-class carriage and No. 36 engine. 3. Nil.	392,868 miles.
Great Northern (Ire- land).	- - -	No failures reported.	—	1,001,139 miles.
Great Southern and Western Railway, Ireland.	Smith's Vacuum Brake. (175 engines fitted. See Return No. 1, page 30.)	March 27 June 4 No failures reported.	1. Nil. 2. <i>Failure or partial failure to act under ordinary circumstances to stop a train when required.</i> The 10.45 a.m. ex Queenstown overran Rushbrook station 20 yards. Caused by coupling tube between engine No. 39 and carriage being uncoupled. The 1.10 p.m. ex Dublin overran Kildare station 30 yards. Caused by thread of pipe getting stripped on engine No. 18. 3. Nil.	930,158 miles.
Midland Great Western Railway of Ireland.	- - -	No failures reported.	—	Automatic Vacuum Brake. 16,729½ miles.
Sligo, Leitrim, and Northern Counties.	- - -	No failures reported.	—	Smith's Vacuum Brake. 15,308 miles.
Waterford and Limerick	- - -	No failures reported.	—	Automatic Vacuum Brake. 23,282 miles.
West Clare - - -	- - -	No failures reported.	—	26,178 miles.

No. 3.

RETURN for the Six Months ending on the 30th day of June 1890, of the number of miles run by Passenger Trains not fitted with CONTINUOUS BRAKES on Railways.

Name of Railway Company.	Name of Railway worked by Company on which Passenger Train ran without Continuous Brake.	Number of Miles run by Passenger Trains without Continuous Brakes.
ENGLAND AND WALES.		
Aylesbury and Buckingham -	Nil.	—
Barry Dock and Railway -	Nil.	—
Bishop's Castle -	Bishop's Castle -	—
Brecon and Merthyr Tydfil Junction	Nil.	—
Bristol Port Railway and Pier -	Bristol Port Railway and Pier -	22,146
Cambrian -	Cambrian and Mid Wales Railways -	410,809
Cheshire Lines Committee -	Cheshire Lines -	44
Colne Valley and Halstead -	Colne Valley and Halstead -	Mixed trains 21,623
Corris -	Corris -	6,365
East and West Junction -	East and West Junction -	10,873
Eastern and Midlands -	Branch Line Melton to Yarmouth -	43,090
Festiniog -	Festiniog -	20,800
Furness -	Furness Whitehaven, Cleator, and Egremont Cleator and Workington Junction -	} 109,874
Garstang and Knot End -	Garstang and Knot End -	
Golden Valley -	Golden Valley -	29,940
Great Eastern -	Great Eastern, Great Northern and Great Eastern Joint, East London (Great Eastern, &c.), Midland and Great Eastern, Mellis and Eye, Brightlingsea, Lynn and Hunstanton. West Norfolk, Somersham and Ramsey.	34,620
Great Northern -	Great Northern -	4,578*
Great Western -	Main and Branch lines and lines worked by the Great Western Railway Company.	109,967
Hull, Barnsley, and West Riding Junction Railway and Dock.	Hull, Barnsley, and West Riding Junction -	602
Isle of Wight -	Isle of Wight Railway Brading Harbour Railway Joint South-Western and Brighton Companies' Ryde Pier Railway.	50,399 4,770 5,062
	Total -	60,231

* The number of miles above referred to, consisted of the mileage of fish trains, run at passenger speed and not having any passenger vehicles attached.

Name of Railway Company.	Name of Railway worked by Company on which Passenger Train ran without Continuous Brake.	Number of Miles run by Passenger Trains without Continuous Brakes.
Isle of Wight Central - - -	Isle of Wight Central - - -	57,502
Lancashire and Yorkshire - -	Nil.	—
Liskeard and Caradon - - -	Nil.	—
London and North-Western - -	London and North-Western main lines - " " branch lines - London and North-Western and Great Western Joint. Cockermouth, Keswick, and Penrith Railway Central Wales and Caermarthen Junction Line	144,902
London and South-Western - -	London and South-Western Railway and Branches.	16,087
London, Brighton, and South Coast	London, Brighton, and South Coast -	895
London, Chatham, and Dover -	London, Chatham, and Dover, and Dover and Deal.	634,595
Londonderry (Seaham and Sunderland)	The Londonderry Railway, between Seaham and Sunderland.	—
London, Tilbury, and Southend -	Nil.	—
Manchester and Milford - - -	Manchester and Milford - - -	57,755
Manchester, Sheffield, and Lincolnshire.	Manchester, Sheffield, and Lincolnshire - Sheffield and Midland Committee - Oldham, Ashton, and Guide Bridge Committee. Macclesfield Committee - - -	4,488
Manchester, South Junction, and Altrincham.	Nil.	—
Maryport and Carlisle - - -	Maryport and Carlisle Main Line, Derwent Branch, and Bolton Branch.	91,802
Mawddwy - - - - -	Mawddwy - - - - -	7,357 $\frac{1}{2}$
Mersey - - - - -	Nil.	—
Metropolitan - - - - -	Nil.	—
Metropolitan District - - -	Nil.	—
Midland - - - - -	Midland - - - - -	290,472
Midland and South-Western Junction	Midland and South-Western Junction -	Passenger trains 51,762 Mixed trains 19,466 Total - 71,228
Neath and Brecon - - - - -	Neath Branch only - - - - -	Passenger trains 154 Mixed trains 11,576 Total - 11,730
North-Eastern - - - - -	North-Eastern : Ordinary Trains - - -	2
North London - - - - -	Nil.	—
North Staffordshire - - - - -	North Staffordshire - - - - -	86,720
North Wales Narrow Gauge -	North Wales Narrow Gauge - - - - -	14,455

Name of Railway Company.	Name of Railway worked by Company on which Passenger Train ran without Continuous Brake.	Number of Miles run by Passenger Trains without Continuous Brakes.
Pembroke and Tenby - - - -	Pembroke and Tenby - - - -	40,622
Pontypridd, Caerphilly, and Newport	Nil.	—
Ravenglass and Eskdale - - -	Ravenglass and Eskdale - - -	Passenger trains 6,265 Mixed trains 3,224 Total - 9,489
Rhondda and Swansea Bay - -	Nil.	—
Rhymney - - - -	Nil.	—
Seacombe, Hoylake, and Deeside -	Nil.	—
Severn and Wye and Severn Bridge	Nil.	—
Somerset Joint Committee - - -	Somerset and Dorset Joint line - - -	772
South-Eastern - - - -	South-Eastern and its Branches - - -	110,333
Southwold - - - -	Southwold - - - -	13,902
Taff Vale - - - -	Taff Vale - - - -	1,650
Talylyn - - - -	Talylyn - - - -	4,889
West Lancashire - - - -	West Lancashire and Liverpool, Southport, } and Preston Junction - - - }	3,501
West Somerset Mineral - - -	West Somerset Mineral - - -	3,744
Wrexham, Mold, and Connah's Quay	Wrexham, Mold, and Connah's Quay -	Mixed trains 14,245
SCOTLAND.		
Ayrshire and Wigtownshire - - -	Ayrshire and Wigtownshire	23,618
Caledonian - - - -	Caledonian - - - - Callander and Oban - - - - Cathcart - - - - Killin - - - - Portpatrick and Wigtownshire - - - Kilsyth and Bonnybridge - - -	69,410 37 8 4,452 899 240 Total - 75,046
Glasgow and South-Western - - -	Glasgow and South-Western, Glasgow and Paisley, Glasgow, Barrhead and Kilmarnock, and Portpatrick and Wigtownshire Railways.	45,422
Glasgow, Barrhead, and Kilmarnock Joint.	Beith Branch - - - -	13,820

Name of Railway Company.	Name of Railway worked by Company on which Passenger Train ran without Continuous Brake.	Number of Miles run by Passenger Trains without Continuous Brakes.
Great North of Scotland - - -	Great North of Scotland - - -	Passenger trains - 204,511 $\frac{3}{4}$ Mixed trains 130,266 Total - 334,777 $\frac{3}{4}$
Highland - - -	Nil.	—
North British - - -	North British - - - Glasgow, Yoker, and Clydebank - - - Blane Valley - - - Strathendrick and Aberfoyle - - - Anstruther and St. Andrews - - -	} 399,445
Portpatrick and Wigtownshire Joint Committee.	- - - - -	32,093
IRELAND.		
Ballycastle - - -	Ballycastle - - -	16,980
Belfast and County Down - -	Belfast and County Down - -	186,123
Belfast and Northern Counties -	Belfast and Northern Counties, Carrickfergus and Larne, Derry Central, Draperstown and Limavady, and Dungiven.	80,539
Bessbrook and Newry - -	Bessbrook and Newry Tramway - -	10,080
Castlederg and Victoria Bridge -	Nil.	—
Cavan, Leitrim, and Roscommon Light Railway and Tramway.	Nil.	—
Cork, Bandon, and South Coast -	Cork and Bandon - - - Ilen Valley - - - Bantry Extension - - - Clonakilty Extension - - -	60,869 18,295 12,555 7,218
		Total - 98,937
Cork and Macroom Direct -	Cork and Macroom Direct - - -	36,299
Cork and Muskerry Light - -	Nil.	—
Cork, Blackrock, and Passage -	Cork, Blackrock, and Passage - -	30,699
Dublin, Wicklow, and Wexford -	Dublin, Wicklow, and Wexford - -	35,925
Dundalk, Newry, and Greenore -	Dundalk, Newry, and Greenore - -	37,714
Finn Valley - - -	Finn Valley - - -	18,003
Great Northern (Ireland) - -	Nil.	—
Great Southern and Western -	Nil.	—
Londonderry and Lough Swilly -	Londonderry and Lough Swilly and Letterkenny.	46,263

Name of Railway Company.	Name of Railway worked by Company on which Passenger Train ran without Continuous Brake.	Number of Miles run by Passenger Trains without Continuous Brakes.
Midland Great Western - - -	Nil.	—
Sligo, Leitrim, and Northern Counties	Sligo, Leitrim, and Northern Counties -	Mixed trains 33,941
Waterford and Central Ireland -	Waterford and Central Ireland and Kilkenny Junction and Central Ireland.	70,953
Waterford and Limerick - - -	Limerick and Kerry - - - - } Athenry and Ennis - - - - } Athenry and Tuam - - - - } Southern - - - - - } Rathkeale and Newcastle Junction - - } Tralee and Fenit - - - - - }	337,179½
Waterford and Tramore - - -	Waterford and Tramore - - -	20,745
Waterford, Dungarvan, and Lismore	Waterford, Dungarvan, and Lismore - -	27,649
West Carbery - - - - -	Nil.	11,197
West Clare - - - - -	Nil.	—
West Donegal - - - - -	West Donegal - - - - -	23,016

APPENDIX.

STATEMENT of CASES in which ACCIDENTS have been PREVENTED by the use of the
WESTINGHOUSE CONTINUOUS AUTOMATIC AIR BRAKE during the six months
ending the 30th June 1890.

Date.	Train.	Particulars.
1890.		
Jan. 11	10.15 p.m. South Croydon to Victoria.	After starting from Clapham Junction the guard saw a man between the train and the platform. He applied the brake and stopped. The man, who was not sober, was got out uninjured.
" 27	4.15 p.m. Hastings to Horsted Keynes.	When running between Polegate and Berwick the driver observed some hounds about 200 yards in front of the engine. He shut off steam and applied the brake, by which means he was able to stop before running over any of them.
Feb. 4	10.8 a.m. Victoria to London Bridge.	The driver found the distant-signal for Clapham Junction at danger, and the weather being foggy, he stopped and then went on to the stop-signal, which was lowered for him. Just before reaching the platform, however, he saw the 10.5 a.m. Victoria to Hastings train standing there, but by means of the brake he succeeded in stopping his train about three yards from the other.
" 4	10.5 a.m. Victoria to Hastings.	The driver reports on arriving at Clapham Junction an engine stood at the starting-signal waiting to go away, and, on its doing so, the fog signalman came and told him to pull up as another train was being let into the platform road. With the aid of the brake he stopped about 20 yards from the engine.
" 18	3.48 p.m. Eastbourne to Brighton.	When about half way between Polegate and Berwick the driver observed the East Sussex harriers on the line. He shut off steam and applied the brake, by which means he was able to stop before running over any of the hounds.
" 21	12 noon, Dyke to Brighton.	When running between the Dyke and West Brighton at a speed of 20 miles per hour the driver observed some hounds upon the line about 150 yards ahead. He states that had it not been for the brake he would have been unable to stop before running over them as the line at this spot is on a decline of 1 in 38.
March 14	10.44 p.m. Victoria to West Croydon.	A man who was the worse for drink fell off the platform at Grosvenor Road as this train was approaching. By means of the brake it was stopped in time to prevent his being run over.
April 21	1.6 p.m. Preston Park to Worthing.	When passing through Lancing station at a speed of from 35 to 40 miles per hour the driver observed a horse and cart coming through the occupation gate, about 80 yards in front of him. He sounded the whistle and applied the brake, by which means he was able to check the speed of the train and so enable the horse and cart to get clear. (Man in charge had to open the gate on the other side of the line before clearing.)
May 19	6.38 p.m. London to Wimbledon.	On approaching Old Kent Road station the driver observed a boy run across the line in front of the engine, and, becoming confused, he tried to return the same way, but the driver, seeing he would knock him down, applied the brake and was thus enabled to pull up just in time to prevent his doing so.

LONDON AND NORTH-WESTERN RAILWAY.

Continuous Brake Failures and Irregularities.

		Half year ending			
		June 1887.	December 1887.	June 1888.	December 1888.
Clause 1. (Failure of brake when required to stop trains for the purpose of preventing accidents.)	Auto. Vacuum	Nil	Nil	Nil	Nil
	Simple „ -	Nil	Nil	Nil	Nil
	Chain - - -	Nil	Nil	Nil	Nil
Clause 2. (Failure of brake when required for the ordinary stoppages of trains.)	Auto. Vacuum	Nil	Nil	1	Nil
	Simple „ -	4	8	6	7
	Chain - - -	3	Nil	1	Nil
Clause 3. (Delays to trains owing to irregular working, &c. of brakes.)	Auto. Vacuum	Nil	Nil	14	41
	Simple „ -	40	33	34	29
	Chain - - -	3	2	2	3

LONDON, BRIGHTON, AND SOUTH COAST RAILWAY.

STATEMENT showing the NUMBER of TIMES the WESTINGHOUSE CONTINUOUS AUTOMATIC AIR BRAKE has been used on this railway on two particular days during the six months ending 30th June 1890.

Thursday, March 13th.

With passenger trains	-	-	-	-	14,238
With engines only	-	-	-	-	7,910
Total	-	-	-	-	22,148
Number of booked stoppages	-	-	-	-	9,262

Wednesday, June 18th.

With passenger trains	-	-	-	-	14,788
With engines only	-	-	-	-	8,503
Total	-	-	-	-	23,291
Number of booked stoppages	-	-	-	-	9,433

2.—RULES and REGULATIONS relating to CONTINUOUS BRAKES.

CAMBRIAN RAILWAYS.

Circular No. 206.

INSTRUCTIONS FOR WORKING THE VACUUM BRAKE.

1. Certain of the carriages and vans at present working between Whitechurch and Aberystwith, and to a limited extent on other parts of the line also, are fitted with a Non-automatic Vacuum Brake, *under the control of the engine-driver only.* These vans are also fitted with an automatic arrangement, held off by a small vacuum to be constantly maintained in the train pipe when the engine has been coupled up. Should this vacuum not be maintained, the valve in the van will drop, the bell ring, and the van brake be instantly applied. The carriage examiners will be responsible for winding up the bell when the train is marshalled, and the guard for seeing it kept wound up on the journey.

2. The brake will eventually be fitted to all the Company's stock, but until then, some of the carriages will be fitted with train pipes only, and when it is necessary to run such carriages in Vacuum Brake trains, they must as far as possible be placed *behind carriages fitted with the brake and before the rear van.*

3. The person whose duty it is to couple up the brake pipes previous to the starting of a train, must as soon as the connexions are complete inform the driver, who will then raise the vacuum, by the use of the ejector. Porters and others are cautioned that in passing between vehicles they must not step upon the brake pipes.

4. Before giving the signal for the train to start, the guard must satisfy himself that the valve in his van has been raised by the vacuum, that the bell has ceased to ring, the small catch dropped out of gear, and that the gauge shows not less than 15 inches of vacuum. Should the gauge not show that amount of vacuum, the guard must hold up steadily the white flag to the driver, waving it when the necessary vacuum is reached. At night the same signals are to be given with a white light.

5. It will be the duty of the guard before starting, and at places where engines are changed, to inform the driver the number of vehicles on the train fitted with the Vacuum Brake complete, as well as the number fitted with the pipe only.

6. The brakes throughout the train being under the control of the driver, the use of the hand brake in the vans is not required for ordinary stops for which the use of the Vacuum Brake is permitted (*see* paragraph 14), but guards must at all times be prepared to apply the hand brake immediately on its being called for by the driver's whistle.

7. If at any time during a journey the Automatic Brake in the van goes on, and the bell rings, the guard must at once endeavour to ascertain the cause, which may arise from the train breaking in two, failure of some part of the brake apparatus, or neglect on the part of the driver to maintain the small vacuum. If the guard is satisfied that the application of the brake has not arisen from the train breaking loose, and can perceive nothing wrong with the train which would require it to be stopped, he must put the Automatic Brake out of gear by pulling up the spindle of the valve, and hooking in the catch, to prevent the brake blocks rubbing the wheels of the van to the next stopping place, where the guard must call the driver's attention to the matter.

8. The guards of all trains fitted with the Vacuum Brake must insert on their reports the words "Continuous Brake Train," and if only for part of the journey, between what points, with full particulars of

any defects which may occur in the working of the brake during the journey, including its automatic action under the circumstances described in paragraph 7.

9. To enable a van to be moved when the engine is detached from the train, the Automatic Brake can be held off by pulling up the spindle of the valve, and hooking in the catch. The valve must be so hooked up on coming to a stand at the end of a journey. The brake pipes of carriages standing in sidings must not be left hanging loose, but fixed to the plug.

10. The Vacuum Brake stock of the following Railway Companies may be placed with Cambrian Brake stock in making up Continuous Brake trains, subject to its being dealt with as provided in the second part of par. 12, viz. :—

London and North-Western.

North Stafford.

Great Northern.

Manchester, Sheffield, and Lincolnshire.

Manchester South Junction and Altrincham.

Cheshire Lines.

Caledonian.

The vehicles of any other company fitted with a Vacuum Brake must when possible be placed in the rear of Cambrian Continuous Brake trains, *and the pipes not coupled up*, but if it is absolutely necessary to marshal them in such trains, they are to be placed as far back as possible, the pipes left uncoupled, and the Vacuum Brake used only on the vehicles between them and the engine. If, however, such foreign vehicles are fitted with an apparatus for cutting off the brake cylinder from the train pipe, and the brake has been put out of gear, the pipes may be coupled up. Horse boxes and other vehicles *fitted with train pipes only* may be marshalled in the trains and the pipes coupled.

11. When any considerable number of vehicles not fitted with the Vacuum Brake, or having pipes only, are attached to a train fitted with such brake, the guard in the rear van must immediately, upon the Vacuum Brake being applied by the driver, apply his hand brake, and keep it tightly on, either until the train has come to a stand, or the driver has taken off the Vacuum Brake, and is again going forward. This action is necessary to prevent the rebound of the carriages which may occur with trains composed of vehicles only partially fitted with Continuous Brakes.

12. When a Cambrian carriage fitted with the brake is sent forward to the Great Western or Midland lines, the connexion between the train pipe and the brake cylinder must be cut off by means of the handle painted red, placed at each side of the carriage, close under the frame. This handle forms part of a rod extending across the carriage, and provided at each end with three notches. When it is desired to disconnect the brake, either for the purpose of sending the carriage to the lines mentioned, or if, when running, the brake is found defective, the handle must be pulled or pushed into one of the end notches. When right for working, the handle will stand in the centre notch, level with the side of the carriage frame, and examiners must see that the handle is placed in this position when carriages are returned from a foreign line, or after having undergone repairs.

Some of the London and North-Western Company's carriages are now fitted with the Automatic Vacuum Brake, and when Cambrian carriages are returned from that Company's line, special care must be taken that the handle is put back to the centre notch. For the same reason the connecting handle on London and North-Western carriages fitted with the Automatic arrangement must be moved to the position marked "Simple" before the carriages are placed in Cambrian Vacuum Brake trains.

13. Enginemen must be careful not to put on the Vacuum Brake too suddenly, and drivers of all down trains must test the brake before commencing the descent of Talerddig incline. Special instructions to enginemen will be issued by the Locomotive Superintendent.

14. The Vacuum Brake is *not to be used except on emergency at—*

- (a) Terminal stations.
- (b) Junctions between single and double line.
- (c) Stations on single line where other trains are to be passed or crossed.
- (d) *Nor at any station, unless the driver is satisfied at the time of shutting off steam that there is an obstruction on the line which he could not stop short of by the use of the hand brakes.*

Station-masters are to report any breach of this regulation which may come under their notice.

In all the foregoing cases steam must be shut off, and the speed reduced in the same manner as if the train were fitted with the ordinary hand brakes only.

Please acknowledge receipt on form annexed.

J. CONACHER,

Oswestry, 15th June 1888.

Secretary.

EASTERN AND MIDLANDS RAILWAY.

NOTICE TO ENGINEMEN AND FIREMEN.

Engines Nos. 32 to 35 inclusive have been fitted, in addition to the Westinghouse brake for engine, with a combination ejector for working simple or automatic vacuum brake on the foreign excursion trains.

The following regulations must be observed :—

Testing the Brake before starting.

1. Before starting with any train the engineman must ascertain whether the train is fitted with the simple or automatic vacuum or Westinghouse; he must also satisfy himself that the brake-pipe between his engine and the train has been properly coupled up, and he must then test the brake to see that it is in good working order.

Simple Vacuum.

2. To apply the brake the handle on the combination ejector must be pushed from the driver, and to release the brake pulled to him.

Automatic Vacuum.

3. To apply the brake the handle on the combination ejector must be pulled towards the driver, and to release the brake pushed from him.

4. Before starting the driver must see that the gauge indicates at least 18 inches of vacuum, and that it be maintained during the journey, and 70 lbs. of air pressure indicated by the Westinghouse gauge.

5. At any station where there is a likelihood of vehicles being put on or taken off, the vacuum in the continuous pipe must be destroyed by opening the application valve on the engine so that there may be no delay in coupling or uncoupling.

Application of the Brake when running.

6. Referring to No. 293 of the Company's rules respecting the speed of trains when entering terminal stations. Enginemen working trains fitted with continuous brakes are hereby informed that they must not run at a high rate of speed close up to the stations at which they have to stop and suddenly apply the brakes at full power; but in all cases of ordinary stoppages they are to reduce the speed of their trains when approaching stations so as to enable

them to stop at the platforms with the application of a moderate amount of brake power only.

Enginemen must run at a moderate speed through curves, crossings, facing-points, junctions, and must reduce speed before arriving at such places so that the brakes may not be hard on when actually running on them.

Testing the Brake.

7. In addition to testing the brake before starting, as in paragraph 1, enginemen must satisfy themselves before passing the distant-signal of any station at which the train has to stop or reduce speed, that the brake is in working order, and on passing the distant-signal of any terminal station the brake must be applied and speed of train reduced by it. The train must not be allowed to travel between the distant-signal of any terminal station at a higher rate of speed than will admit of its being stopped at the entrance of the station by the application of the ordinary hand brakes only.

Unless the brake is working properly when tested, the engineman must whistle for the guards' hand brakes, stop the train and inform the guards the continuous brake is out of order, and the hand brakes must be relied on for working the train.

8. Any case of the continuous brake connexion being cut off by a "dummy" being placed next the engine must be reported on the driver's return.

9. The vacuum brake will be worked under the rules of the Vacuum Brake Company, copies of which will be issued to drivers.

The attention of all enginemen is specially directed to these instructions, which must be strictly adhered to.

WILLIAM MARRIOTT,

Melton Constable,

Engineer and Loco. Supt.

May, 1888.

THE FURNESS RAILWAYS.

INSTRUCTIONS TO ENGINEMEN, GUARDS, CARRIAGE EXAMINERS, and all others concerned, as to the use of the CONTINUOUS AUTOMATIC VACUUM BRAKE.

Description.

1. The Automatic Vacuum Brake stops the train by the application of the brake blocks to the tyres of the carriages in the same way as the ordinary screw brake, but the levers which apply the blocks, instead of being worked by a screw, are worked by a piston actuated by atmospheric pressure in a cylinder.

2. The following are the principal parts of the apparatus on the carriages:—

The Cylinder.

The Piston.

The Ball Valve.

The Main Train Pipe.

The Flexible Branch Pipe, connecting bottom of Cylinder to Train Pipe.

The Vacuum Chamber, connected to top of Cylinder.

The Release Lever, or Ball Valve, connected to each side of carriage underframe by wire cord.

The Dummy.

The "Universal" Hose and Coupling.

3. By means of the ejector placed upon the engine the air is drawn out of the main train pipe, and from the top and bottom sides of the piston in the cylinder through the flexible branch pipe and through the ball valve from the vacuum chamber, so that in running a vacuum should be maintained throughout the system of 20 inches, and certainly not less than 15 inches.

4. *Brake on.*—The brake is operated either by the brake valve on the engine in connection with the main train pipe or by the guard pressing downwards the lever of the van valve, which is likewise connected with the main train pipe. The effect of this is to admit air to the train pipe, and thence through the flexible branch pipe to the bottom side of piston, thereby applying the brakes, the top side and vacuum

chamber maintaining the vacuum through the action of the ball valve, which closes immediately air is admitted to the train pipe.

On a full application of the brake—from whatever cause—all the van valves in the train will open automatically and admit air through each van valve simultaneously, thus obtaining a more rapid application of the brake.

5. In the event of a train parting, the "Universal" hose and couplings will, without damage, become detached, and the brakes will immediately apply themselves.

6. *Brake off.*—In order to release the brakes the driver must move the lever of brake valve on the engine to the position marked "off" when the ejector will at once re-create the vacuum throughout the system as before described, thus allowing the piston to fall by its own weight and thereby release the brakes.

7. To release the brakes on any carriages that require to be shunted, in the event of the engine not having done so before being detached from the train, the ball valve must be opened on those carriages by means of a small wire cord which is placed on either side of the carriage underframe. This admits air to the vacuum chamber and top side of piston, thus restoring equilibrium on both sides of piston, under which conditions the brakes fall off by their own weight.

8. A dummy is provided to which the rear coupling must always be attached.

Instructions for working.

9. In the formation of trains, the coaches fitted with the Automatic Vacuum Brake must be placed together next to the engine, so that the Automatic Vacuum Brake may be used.

10. The brake can be applied throughout the whole of the vehicles fitted with the apparatus by the engine-man from the engine or by the guard from his van, as before described; but in order that this may be done, it is imperative that the flexible connections between each carriage and between the engine and the train be properly coupled up; also that the flexible connection on the last vehicle fitted with the brake be placed on the dummy provided for that purpose described in clause 8.

11. The brake must be used for all ordinary stops, but must not be applied with full force except in cases of emergency. For ordinary stops, and particularly when approaching junctions where timed to stop, enginemen must be careful to reduce the speed, so that a moderate application of the brake will suffice.

12. Guards must not apply the Automatic Vacuum Brake except in cases of absolute necessity, and whenever they do so a full and special report of the circumstances must be made, and the occurrence must also be notified on their reports; they must at all times be ready to apply the hand brake should the driver call for assistance.

13. *Guards.*—The guard, before giving the signal to start at the commencement of the journey, and at stations where any of the flexible pipes have been coupled or uncoupled, must ascertain and inform the engineman—

- (a) That all the flexible pipes are properly coupled up continuously throughout the train, and that the flexible pipe of the last brake vehicle is properly placed upon the dummy.
- (b) The number of vehicles in the train fitted with the brake the flexible pipes of which are coupled up to the engine.
- (c) The number of inches of vacuum indicated by the gauge in the rear van.

14. *Enginemen.*—The enginemen before starting at the commencement of the journey, and also at stations where any of the flexible pipes have been coupled or uncoupled, must ascertain from the guard the number of vehicles in the train fitted with

the brake the flexible pipes of which are coupled up to the engine, and the number of inches of vacuum shown by the gauge in the rear van.

He must also be careful to see—

- (a.) That the vacuum pipe of his engine is properly coupled up to the leading vehicle in the train.
- (b.) The number of inches of vacuum indicated by the gauge on the engine.

15. If from any cause the engineman is unable to obtain at least 15 inches of vacuum, he must inform the guards of the fact, and the train must be worked forward with the ordinary hand and steam brakes and he must report on his daily return when he is not able to obtain 20 inches.

16. When the pipes between the engine and train are disconnected, the couplings must be placed on the dummies provided for that purpose. Detached carriages must always have the hose couplings placed on the dummies.

17. At any station where the driver is informed that vehicles are to be attached to or taken off the train, the vacuum in the main train pipe must be destroyed, as described in clause No. 7, so that there may be no delay in coupling or uncoupling.

18. In the case of vans fitted with the combined hand and vacuum brake, the guard must see before starting that the hand brake is screwed full "off."

19. When vehicles are supplied with connecting pipes only, they must be considered as vehicles without the brake, but the brake connections must be made as described in clause 10.

20. When vehicles not fitted with a continuous brake or having connecting pipes only, are attached to a train fitted with such brake, or to an engine having the brake on the engine wheels as well as the tender wheels, *the guard in the rear van must, immediately upon the continuous or engine brake being applied by the driver, apply his hand brake, and keep it tightly on, either until the train has come to a stand or the driver has taken off his brake, and is again going forward, as the case may be.* This arrangement is necessary to prevent the rebound of the carriages and possible breaking of the drawbars which may occur when a powerful brake is applied to the front portion of the train only.

INSTRUCTIONS FOR TESTING.

21. It is the duty of the enginemen in every instance, *before taking their engines out of the shed,* to test the brakes on both engine and tender, as directed below, so as to satisfy themselves that they are in efficient working order.

22. *AUTOMATIC VACUUM BRAKE.*—The coupling at the back of the tender, when not connected to the train pipe, must always be placed on the iron socket fixed for that purpose to the tender pipe. This socket is perforated so that a vacuum cannot be obtained by the small ejector, nor retained after the large ejector is shut off; thus, should a porter or other person neglect to couple the pipe to the train, the error will at once show itself on the vacuum gauge.

23. To properly test the action of the ejectors and tightness of the joints, &c., each engine will be supplied with an iron plug, which is to be fixed in the above-mentioned socket. The face of the coupling at the end of the flexible pipe must then be securely placed on this plug by the fireman, after which each ejector can in turn be tried by the engineman, who must note also the time that the vacuum remains in the pipes after the ejectors are shut. Should the fall of the vacuum be very rapid, the joints must at once be examined, in order to discover signs of leakage. The plug when not in use must be kept in the engine tool box.

24. In order to draw out any water that may have accumulated in the engine pipes, the engineman

must take the hose pipe off the iron socket at the back of the tender and use the large ejector freely. All drain valves and pipes in connection with the brake apparatus must be free and in working order.

25. **STEAM BRAKES.**—When engines are fitted with these, whether in addition to the brake before mentioned or otherwise, they must be tested with full steam pressure.

26. Enginemen must always test the continuous brakes, to satisfy themselves that they are in good working order, after the engines are coupled to the trains and immediately before starting.

By order.

Barrow, July 30th, 1884.

GREAT NORTHERN RAILWAY.

VACUUM BRAKES.

Instructions for working the Vacuum Brake either as a Simple or Automatic Brake when the Carriages, &c. are fitted with the Combination Brake or the Automatic Brake only.

The attention of station masters, foremen, guards, porters and others is drawn to the arrangement under which carriages and other vehicles fitted with the simple or automatic apparatus can be used, either for the application of the simple or automatic brake, the arrangement consisting of a short lever at each end or side of the carriage or other vehicle, having a quadrant with the letters "Auto." at one end, and "Simp." at the other, indicating automatic or simple.

When carriages or other vehicles are attached to an automatic train, the lever must be turned to "Auto.," and when to a simple brake train to "Simp." When the brake is out of order the lever should be set straight up and down, cutting off the brake connections.

To release the brake from any carriage, &c., pull the cord, the position of which is indicated by a red star on each side of the vehicle. The brake can be applied throughout the whole of the vehicles fitted with the apparatus by the engineman from the engine, or by the guard from his van, but in order that this may be done it is imperative that the flexible connections between each vehicle and between the engine and the train shall be properly coupled together, and the flexible pipe at the rear end be put carefully on the plug.

Special Instructions to Guards.

Guards must see that the gauge in their vans indicates 18 inches of vacuum before starting, and they must at all times be ready to apply the hand brake should the driver call by whistle for its assistance, or when approaching a stopping station.

When carriages are to be slipped the pipes must be put upon the plug, and the cord pulled to release the brake. The carriage, after being slipped, must be brought to a stand with the hand brake.

Special Instructions to Engine Drivers.

Before starting the driver must see that the gauge indicates at least 18 inches of vacuum, and that it be maintained during the journey. The vacuum is created by admitting steam to the small ejector. To release the brake close the application valve, when the brake-blocks will fall from the wheels.

When the automatic vacuum brake is to be used for the ordinary stoppage of trains, it must be done by the engineman opening the application valve on the engine gradually, not suddenly or with full force, except in cases of emergency.

At any station where there is likelihood of vehicles being put on or taken off, the vacuum in the continuous pipe must be destroyed by opening the application valve on the engine so that there may be no delay in coupling or uncoupling.

General Instructions.

All passenger trains must be fitted with a continuous brake.

When a train, which ordinarily consists of vehicles fitted with a continuous brake, is not so fitted throughout, the front half, at least, must be fitted and worked with a continuous brake.

The working of these brakes by the engineman will not relieve guards from any responsibility. They must keep a good look-out, and be prepared to apply hand brakes should necessity arise.

Station-masters, inspectors, and foremen must select experienced men to couple together the pipes of vehicles fitted with any air brake, and must carefully examine the couplings before starting train. They must give special attention to the proper coupling of air brake pipes, and make such arrangements as will ensure these pipes being cared for, and not improperly used.

Guards must see that pipes of air brakes are properly coupled together before starting, and whenever any engine or vehicle is attached or detached; and they must, whenever the train stops at a station, examine the pipes and couplings.

In vehicles fitted with vacuum and also with Westinghouse brake pipes, the latter must, when such is practicable, be above the vacuum pipes.

The communication cord must be attached to lever of brake of engine. The cord must be given by platform porter to engineman or fireman, who must attach it to brake lever.

When vehicles fitted with continuous air brake are left in sidings or at stations, the brake pipes of each vehicle must be coupled together, and not left hanging loose. Porters and others are cautioned that in passing between vehicles they must not step upon the brake pipes, nor interfere with or injure the connections.

Guards must report specially and also enter on their journals full particulars of any defect, failure, or unsatisfactory working of the brake of their train, or any portion of the fittings, couplings, &c., whether vacuum, Westinghouse, hand, or other brake.

The head guard of a train provided with a continuous brake must, before starting train, and at places where engines are changed, inform the engine driver the number of vehicles there are on the train, and upon how many of them the brake can be applied; and when any vehicles are attached or detached on journey, the engine driver must be advised, and told whether the attaching or detaching of such vehicles will interfere with working of brake on whole or a portion of train, and, if the latter, to what extent.

The engine driver of a train provided with a continuous brake must, before starting, and at places where engines are changed, ascertain from the head guard the number of vehicles there are on the train, and upon how many of them the brake can be applied, and, when any vehicles are attached or detached on journey, whether the attaching or detaching of such vehicles will interfere with working of brake, and, if so, to what extent.

Terminal stations must be approached cautiously, and guards must apply their hand brakes, should there be any reason to suppose the engineman has not the train well in hand, or that there is the least risk of not being able to stop at entrance to station. Guards must have their hands on their hand brakes when passing the distant signal of a terminal station, and must so remain and be ready to apply brakes until train is stopped at station.

Enginemen must test the brake before starting, at each station where engine is changed, and again at each station where any vehicle is attached or detached. They must satisfy themselves, before passing the distant-signal of any station at which the train has to stop or reduce speed, that the brake is in good working order, and on passing the distant-signal of any terminal station the brake must be applied and speed of train reduced by it. The train must not be allowed to

travel between the distant-signal and any terminal station at a higher rate of speed than will admit of its being stopped at entrance to station by the application of the ordinary hand brakes only. Enginemen must from time to time, and whenever they are likely to have to make use of the brake, test its working, and must not at any time run more than 20 miles without trying the brake. They must not pass the distant-signal of any important station, such as Hatfield, Hitchin, Peterboro', Retford, Doncaster, &c., nor go down any incline, without trying the brake, and must in each case satisfy themselves it is in good working order. Unless the brake is working properly when thus tried, the engineman must whistle for the guards' hand brakes, stop the train, and inform the guards the continuous brake is out of order, and the hand brakes must be relied upon for working the train. Special care must then be taken in approaching stations at which the train has to stop.

The brake must also be tested on—

- All up trains when passing Holloway station (London),
- All down trains when passing Meadow Lane junction (Nottingham),
- All down trains when passing Hammerton Street junction (Bradford),
- All down trains when passing the goods yard junction, Dewsbury.
- All down trains when passing the junction with Midland Railway, Keighley.
- All down trains when passing the down distant-signal of the Midland junction at Shipley.

A chain with hook is attached at each end of the several vehicles composing the coaching stock. This hook must be put round the rod of the screw coupling, immediately above the ball, to prevent the latter touching the brake pipes. Station masters, guards, and others must report any case of the suspended weight of a screw coupling being found above side chain or brake pipe.

Guards must inform enginemen of the number of carriages on their train which are not fitted with brake apparatus, but with through pipes only.

Vacuum brake pipe connections, when not in use, must be securely placed on the studs provided for the purpose.

Circular No. 5887a is cancelled.

P. STIRLING,

Locomotive Engineer.

FRANCIS P. COCKSHOTT,

Superintendent of the Line.

King's Cross,

31st December, 1887.

GREAT WESTERN RAILWAY.

CONTINUOUS AUTOMATIC VACUUM BRAKE.

Description.

1. The Automatic Vacuum Brake stops the train by the application of the brake blocks to the tyres, in the same way as the ordinary screw brake; but the levers which apply the blocks instead of being worked by a screw are worked by a cylinder and piston, actuated by atmospheric pressure.

2. The following are the principal parts of the apparatus on the carriages, the reference letters showing the corresponding parts on the diagrams given below:—*

- A, continuous pipe, connected by flexible pipes between the carriages.
- B, hollow piston rod, connected by branch pipe to the continuous pipe.
- C, piston.
- D, cylinder, capable of moving freely up and down on the fixed piston, and connected at the bottom with the brake levers E.

The piston is packed with an india-rubber ring, so arranged that air can pass freely from the bottom of the cylinder to the top, but not from the top to the bottom. The piston rod is also packed with an india-rubber gland.

3. *Brake off.* The air is exhausted from the pipes and cylinders by the ejector on the engine when the train is at rest, or by the air-pump on the engine when the train is in motion. The gauges on the engine and in the guards' compartments indicate the power available for stopping the train, and should show not less than 20 inches nor more than 30 inches of vacuum *when the train is running*. The vacuum being equal on both sides of the piston, the cylinder falls by its own weight and holds the brakes off the wheels.

4. *Brake on.* The moment air is admitted into the continuous pipe, whether by the engineman or by the guard, or by the accidental severance of the couplings, it rushes through the continuous pipe down the hollow piston-rod into the *upper* part of the cylinder, and, pressing the india-rubber packing ring against the sides of the cylinder, seals the vacuum on the under side of the piston so that the pressure of air in the upper part of the cylinder having nothing to balance it on the other side of the piston thrusts up the cylinder and presses the brake blocks against the wheels.

5. *Release of Brake.* When the brake has been applied it will remain on, unless released either by the exhaustion of the air from the upper side of the piston (see par. 3) or by the admission of air to the under side of the piston. In practice the latter mode is generally found convenient, and a small hole, *h*, is provided through which the air can slowly leak from the upper to the lower part of the cylinder and gradually release the brake.

6. *Release Valves.* The majority of vehicles are fitted with release valves for releasing the brake by hand, as shown at F on diagram. These valves can be opened by pulling the handle fixed on each side of the vehicles.

7. *Brake Setters.* In order to apply the brakes on each carriage in the train as nearly as possible at the same moment, it is necessary to admit the air to the continuous pipe in more than one place. For this purpose a valve or brake setter is provided in each guard's compartment, so constructed that any sudden increase of pressure in the pipe instantly causes the valve to open automatically and admit a supply of air, after which it closes again by its own weight. By lifting the handle attached to the brake setter the guard can on an emergency apply the brakes on the entire train.

Instructions for Working.

8. In the formation of trains, when the whole of the coaches are not fitted with the automatic vacuum brake those that are so fitted must be placed together, and next to the engine. When the whole train is not fitted, the automatic vacuum brake must not be used for ordinary stoppages but only in cases of emergency. In all cases where the automatic vacuum brake is only partially fitted to a train, a brake van or a carriage with a guard in it must be the last passenger vehicle in the train, and this guard must apply his hand brake in running into all stations where the train is to be stopped.

9. The brake can be applied throughout the whole of the vehicles fitted with the apparatus, by the engineman from the engine, or by the guard from his van, but in order that this may be done, it is imperative that the flexible connections between each carriage, and between the engine and the train, shall be properly coupled up.

10. Guards must never apply the automatic vacuum brake except in cases of absolute necessity, and whenever they do so a full report of the circumstances must be made on their journals; they must at all times be ready to apply the *hand brake* should the engineman call by whistle for its assistance.

* For diagram, see [C.—3873.]

11. When the automatic vacuum brake is to be used for the ordinary stoppage of trains it must be by the engineman opening the air valve on the engine, but it must be done gradually and never suddenly or with full force, except in cases of emergency.

12. In approaching junctions, terminal stations, or stations at which other trains may be standing on the same line of rails, or crossing stations on single lines, the automatic vacuum brake or steam brake must only be used in cases of emergency, the engineman taking care to reduce the speed of the train in accordance with Rule No. 293, so that the train may be brought to a stand by the hand brakes alone.

13. In the event of a train parting, the guard in the rear portion must at once apply his hand brake, and keep it tightly screwed on until the train is again coupled to the engine.

14. In descending inclines the engineman must, when necessary to reduce the speed, use the automatic vacuum brake in preference to the hand brakes.

15. In running through slip stations after a slip carriage has been detached, the vacuum brake must not be used except in cases of emergency; if it is necessary to control the speed of the train, the hand brake must be employed, and in any case the greatest caution should be used to prevent the slip carriage overtaking the train.

16. Many of the slip coaches are fitted with special apparatus to enable the automatic vacuum brake to be worked independently of the main train after the carriage has been slipped. Guards working slip coaches must make themselves thoroughly acquainted with the special directions for working the brake which are posted in the slip compartments.

17. The head guard before giving the signal to start at the commencement of the journey, and at stations where any of the flexible pipes have been coupled or uncoupled, must ascertain and inform the engineman:—

1st. That all vehicles throughout the train fitted with the brake have the flexible pipes properly coupled up;

2nd. That the flexible pipe at the rear of the last brake vehicle is properly placed upon the stop plug;

3rd. That 15 inches of vacuum is indicated by the gauge in the rear van on the train; and,

In the event of there being any vehicles on the train not fitted with the vacuum brake, the head guard must inform the engineman of the fact before starting, so that the engineman may know what number of vehicles he has control over, and what number are without the vacuum brake.

18. The engineman, before starting at the commencement of the journey, and also at stations where any of the flexible pipes have been coupled or uncoupled, must ascertain from the guard the number of vehicles in the train fitted with the brake, the flexible pipes of which are coupled up to the engine, and that a vacuum of at least 15 inches is shown by the gauge in the rear van. He must also be careful to see:—

That the vacuum pipe of his engine is properly coupled up to the leading vehicle in the train;

That at least 15 inches of vacuum is indicated by the gauge on the engine.

19. If from any cause the engineman is unable to obtain at least 15 inches of vacuum, he must inform the guard of the fact, and they must work the train forward with the ordinary hand brakes.

20. Just before coming to a stand, after the application of the automatic vacuum brake at stations, or when stopped on the road, the engineman must use his ejector so as to partially release the continuous brake. This will prevent any rebound of the carriages, and will also enable the engineman to start his train immediately on receipt of the signal to do so.

21. When the pipes between the engine and train are disconnected, the couplings must be placed on the plug stops provided for the purpose. Detached carriages must always have the hose couplings placed on the plug stops.

22. At any station where there is any likelihood of vehicles being put on or taken off, the vacuum in the continuous pipe must be destroyed by opening the air valve on the engine, so that there may be no delay in coupling or uncoupling.

23. As india-rubber is dissolved by oil or grease it is most important that nothing of a greasy nature should be applied to, or allowed to reach the piston or piston rod. The only lubrication which is required is a little pure black lead, which must be placed inside each cylinder by the persons appointed for the purpose. The other part of the brake must be cleaned and oiled by the examiners in the usual way.

24. In the case of vehicles fitted with the combined hand and vacuum brake the guard must see before starting that the hand brake is screwed "full off," and the handle secured by means of the chain provided for the purpose.

25. It is necessary that the words "Continuous Brake Train" shall be written at the top of the engineman's train bill and guard's report for every train fitted with the automatic vacuum brake. It is also necessary for the engineman to show on his mileage ticket the trains which have been worked by him with a continuous brake during the week.

26. If from any cause the automatic vacuum brake is not used, or fails to act when required, or if there is any irregularity in its working, a remark to that effect must be made by the guard on his report, and by the engineman on his train bill, which must be accompanied by a special report giving full particulars of the irregularity.

27. Guards must take care during the journey that nothing in the van is allowed to rest against or in any way interfere with the lever of the brake setter.

28. Other railway companies' vehicles fitted with the automatic vacuum brake may be coupled up and worked with G.W.R. stock. Midland, London and South-Western, and Lancashire and Yorkshire vehicles have a valve for releasing the brake by hand, which can be opened by means of a rod or wire at the side of the vehicle. London and North-Western carriages have either a rod or handle at each side; the former when attached to G.W.R. vehicles should have the rod pushed or pulled into one of the end notches on the rod; those fitted with a handle should have the handle put into the position marked "auto," unless the brake is defective, when it should be put into the centre or "cut-off" position.

All previous instructions are hereby cancelled.

W. DEAN,

Locomotive and Carriage Superintendent.

G. N. TYRRELL,

Superintendent of the Line.

November 1881.—Revised, February 1883 and April 1888.

LANCASHIRE AND YORKSHIRE RAILWAY.

INSTRUCTIONS to ENGINE DRIVERS and GUARDS respecting the AUTOMATIC VACUUM BRAKE under the Control of the Driver.

1. The brake can be applied throughout the train by the driver from the engine, or by the guard from the van. The amount of brake power at command depends upon the amount of vacuum obtained.

2. It is the duty of the fireman, when the engine is attached to the train, to connect the hose coupling on the engine to that on the train; and it is his duty,

when the engine is separated from the train, to place the hose coupling of the engine on to the plug provided for the purpose. The driver must see that the fireman attends to this.

3. Before starting, the driver must see that the gauge indicates at least 18 inches of vacuum. This is done by admitting steam to the small ejector by means of the steam cock provided for that purpose. To apply the brake, move the lever on the brake valve to "On." In ordinary running this lever must stand at "Off," or "Running Position."

4. When any engine working a vacuum automatic train detaches the train, or any part thereof, such train or portion must have the vacuum destroyed by opening the release valves before being coupled up to any other engine or train.

5. Each guard must record on his journal the amount of vacuum registered when starting with his train.

6. It is the duty of the shunter or porter to connect the hose couplings between the carriages, and to place the hose coupling in the rear of the last vehicle on to the plug provided for that purpose. The guard must see that this has been properly attended to.

7. To release the brake (the engine having left the train), first see that the hose-coupling at one end of the train is off the plug; then pull the wire fixed under the body of each carriage as indicated by the arrows. This admits air to the top side of the cylinder, and the brakes fall off by gravity.

8. To couple the hose pipes, the fireman, shunter, or porter must take one in each hand and lift them sufficiently high to hook the bottom horns of the coupling together first, and then, by lowering them, place the top horns of couplings in the slots.

9. To uncouple the hose pipes, the fireman, shunter, or porter must simply lift them straight up, when the horns at the top will come out of the slots, and the couplings will then separate.

10. A chain with hook is attached at each end of the several vehicles composing the coaching stock. The shunter must put this hook round the rod of the screw coupling immediately above the ball, to prevent the latter touching the brake pipes.

11. *The guard is not to make use of the brake except in cases of emergency.*

12. When the guard has occasion to apply the brake, he must press down the lever on the valve placed in his van. This admits air throughout the train pipe. This valve in the van opens automatically when the brake is applied violently by the driver, and ensures rapid action; it should, however, only be so applied in cases of emergency. The guard must see by the gauge that a vacuum of at least 18 inches is maintained, or report otherwise to the driver.

13. In case of a break-loose the guard in the rear van must put the hand brake hard on, and place the strap on the wheel, before going back to protect his train. When a train or any portion of the same is detached, the vacuum brake must not be depended upon, but the hand brake must be used where there is one available; in other cases scotches must be utilised, so as to prevent the vehicles moving after the vacuum has been exhausted.

14. In order that engine drivers, before starting from stations with trains fitted with the automatic brake, may know when the brake connections are complete, the man whose duty it is to couple up the hose pipes must, as soon as the work is done, go to the guard and tell him all is ready for the vacuum to be created. The driver must not open the ejector until the guard, by exhibiting steadily a white hand signal, indicates that he may do so.

15. Before giving the signal for a train to start, the rear guard must satisfy himself that both the vacuum gauges in his van show not less than 18 inches of

vacuum. If the gauge does not show the proper amount of vacuum, the guard must hold up steadily a white flag or hand lamp towards the driver, and continue to exhibit it until the necessary vacuum is reached.

16. Engine drivers must test the continuous brake before passing the distant-signal of any terminal or junction station at which the train has to stop, and the speed of the train must be reduced. Engine drivers must always enter terminal or junction stations at which their trains have to stop (especially such as Manchester (Victoria), Bolton, Liverpool, Bradford, Blackburn, and Wigan, which are worked under the station yard working arrangement, and where trains form connections) at such a speed as to enable them to stop the train clear of any preceding train by the application of the ordinary hand brake only, and guards must watch the speed of their trains and assist the engine drivers by the use of the hand brake. Unless the brake is working properly when thus tried, the engineman must whistle for the guards' hand brake, stop the train, and inform the guards that the continuous brake is out of order, and the hand brake must be relied upon for working the train. Special care must then be taken in approaching stations at which the train has to stop.

17. When backing an engine to a passenger train before coupling up, the fireman must stand by his hand brake.

18. In the event of there being any vehicles on the train not fitted with the vacuum brake, the head guard must inform the engineman of the fact before starting, so that the engineman may know what number of vehicles he has control over, and what number are without the vacuum brake, the guard applying the manual brake for each stop.

19. Should the automatic vacuum brake altogether fail on a train fitted with a manual brake on the van at each end of the train, the driver must advise the guard, who must then work the rear brake if there is only one guard with the train; and if the train consists of more than six vehicles, and there is more than one brake-van on the train, the guard must obtain a porter to take charge of the extra van. These instructions will also apply in case of a non-vacuum engine being provided to work a train of vacuum stock.

J. A. F. ASPINALL, Chief Mechanical Engineer.

JOHN MADDOCK, Superintendent.

Manchester, January 1890.

LONDON AND NORTH-WESTERN RAILWAY.

MEMORANDUM for STATION MASTERS, ENGINEMEN, and GUARDS as to the use of the PATENT CONTINUOUS BRAKE.

CHAIN BRAKE.

Branch Line and Close-Coupled Trains.

The chain brake in close-coupled trains must be carefully applied so as to prevent any complaints of jarring the carriages, or causing any jerk between them and the engine. The driver will only apply the brake in these close-coupled trains in case of emergency.

In all cases where the chain brake is fitted to the train, a cord is connected with the apparatus in the front van, which must be attached by the fireman to

the cord carried on the engine, before the train is permitted to leave the terminal station, *the driver being held responsible for seeing that this is done.*

The brake in the front van and carriages being, by the above means, placed under the control of the engineman, is not, under ordinary circumstances, to be worked by any guard, or travelling porter, who may be on duty in such van; but the rear brake only is to be used, in conjunction with the engine brake, for regulating the stoppage of the train, and this should be so applied as not to skid the wheels.

Should a case of emergency arise requiring additional brake power to ensure the stoppage of a train at any given point, the driver, or fireman acting under his instructions, or front guard, or travelling porter, on hearing the danger whistle, must apply the brake fitted in the front van. The danger whistle will intimate to the rear guard that the front brake is being applied, and that he is to apply the rear brake at once. (G. F., 1513.)

VACUUM BRAKE.

TO ENGINEMEN, BRAKE ATTENDANTS, CARRIAGE COUPLERS, GUARDS, &c.

Instructions for working the Simple Vacuum Brake.

DESCRIPTION.

Each carriage and van is fitted with the vacuum brake, which can be applied by the driver. The van is also provided with an automatic brake, held off by a small vacuum, which is constantly maintained in the train pipe. Should this small vacuum not be kept up, the valve in the van will drop, the bell will ring, and the automatic brake be instantly applied.

A vacuum gauge is placed in the van to indicate the amount of stored-up power reserved for automatic action.

STARTING.

In order that enginemen before starting from stations with trains fitted with the vacuum brake may know when the brake connexions are complete, the man whose duty it is to couple up the brake pipes must, so soon as that work is done, go to the driver and tell him that all is ready for the small vacuum to be raised. It will be the duty of the driver then to raise the vacuum by the use of his ejector.

Before giving the signal for a train to start the rear guard must satisfy himself that the spindle in the rear van has been raised by the small vacuum, that the small catch has dropped out of gear, that the bell in the van working in connexion with it has ceased to ring, and that the gauge shows not less than 15 inches of vacuum.

When the gauge shows 15 inches of vacuum the guard must wave a white flag by day and a white light by night to the engine-driver, who must acknowledge this signal by waving his hand in the day time and by waving a white light at night. If the gauge does not show the proper amount of vacuum, the guard must hold up steadily the white flag or hand lamp towards the driver, and must not wave it until the necessary vacuum is reached. The white and green flag must be shown separately to the drivers, and not waved together.

It will be the duty of the guard before starting the train, and at places where the engines are changed, or vehicles attached or detached, to inform the engine-driver the number of vehicles on the train fitted with the vacuum brake complete, as well as the number fitted with the pipes only.

ATTACHING AND DETACHING.

Vehicles fitted with vacuum brake pipes only, when attached behind the rear van, must have the vacuum pipe connected up to the van, and before giving the

driver a signal to start, the guard must satisfy himself that the gauge in the van shows not less than 15 inches of vacuum.

AUTOMATIC BRAKES.

If at any time during a journey the automatic brake goes on, and the bell rings, the guard must at once endeavour to ascertain the cause. It may be caused by the train breaking in two, by omission on the part of the driver to maintain the small vacuum, or by failure of some part of the brake apparatus.

In all cases where the automatic brake goes on while the train is in motion, guards must not release this brake until either the train is brought to a stand or on receipt of a signal from the driver to do so.

In all cases the guards must enter particulars of the occurrence in their reports.

SHUNTING.

To enable a van to be moved when the engine is detached from the train, the automatic brake can be held off by pulling up the spindle of the valve with the left hand, and by hooking in the catch with the right. The valve must be so hooked up on coming to a stand at the end of a journey.

BELL.

The bell must always be kept wound up, the carriage department being responsible for this duty at the time the train is marshalled, and the guard for attending to it on the journey.

The bell should ring when the engine is detached from a train at intermediate stations, or when the vacuum pipe is disconnected for the purpose of attaching or detaching vehicles, and when this is the case guards, porters, carriage examiners, and others concerned, are instructed that they must not interfere with the spindle in any way to prevent the bell from ringing. Guards must satisfy themselves when taking charge of a van that the bell in the van is fully wound up.

CUT-OFF ARRANGEMENT.

There is a handle painted red placed at each side of the carriage near the centre, and close under the frame, the object of which is to cut off the connexion between the train pipe and brake cylinder. This handle forms part of a rod extending across the carriage, and provided at each end with three notches. When the brake on a carriage is out of order from leakage or other cause, or when a carriage has to run on a foreign line *with an automatic brake, such as the Great Western, Lancashire and Yorkshire, Furness, Great Northern, and Midland Railways, and the railways south of the Thames, this handle must be pulled or pushed into one of the end notches.* When right for working, the handle will stand in the centre notch, and level with the side of the carriage frame.

Care must be taken that the handle is *returned to this position (centre notch)* when the carriage is put into traffic after having undergone repairs to brake gear, or after it has been working on a foreign line, such as those named above.

London and North-Western vehicles fitted with pipes only, and which have no brake apparatus operating on their own wheels, have the end pipes painted red.

FOREIGN COMPANIES' VEHICLES ON VACUUM BRAKE TRAINS.

The vacuum brake stock of the following railway companies may be treated in exactly the same way as ordinary London and North-Western brake stock:—

Caledonian,
Cambrian,
Cheshire Lines,
Manchester, Sheffield, and Lincolnshire,
Manchester South Junction and Altrincham,
North Stafford.

Any other company's vehicles fitted with vacuum brake must, in all possible cases, be placed in rear of London and North-Western trains, and the pipes not coupled up. If it is absolutely necessary to marshal them in the trains, the pipes must not be coupled up, and the vacuum brake must only be used on the vehicles between them and the engine.

If, however, the foreign vehicles are fitted with an apparatus for cutting off the brake cylinder from the main train pipe, and the brake can be put out of gear by means of such apparatus, the pipes may be coupled up.

Horse-boxes and other vehicles fitted with *pipes only* may be marshalled in the trains and the pipes coupled up.

HAND BRAKE.

Guards are reminded that they must use their hand brakes to stop trains on approaching terminal stations or bay sidings, and must not rely on the drivers pulling up trains by means of the vacuum brake.

The continuous brakes throughout the train being under the control of the driver, the use of the hand brake in the vans is not required for ordinary stops, but guards must be prepared to apply the hand brake immediately on its being called for by the driver's whistle.

GEO. FINDLAT.

Euston Station,
December 1888.

SIMPLE AND AUTOMATIC VACUUM BRAKES.

Crewe Works,
1st March 1888.

Instructions to Drivers.

Drivers are hereby instructed that they must ascertain, when attaching to a train, whether it is to be worked "simple" or "automatic."

SIMPLE VACUUM BRAKE.

When working trains with the simple vacuum brake, the split pin attached to the quadrant of the driver's valve brake must be placed in hole marked A.

To keep the van brakes out of action the small vacuum must be maintained by the small ejector, and the finger of the gauge kept standing about the position shown in the diagram.

The steam brake cannot be used alone when the engine is attached to a train, but the vacuum brake can be used alone by pulling the lever of the driver's brake valve over to the small shoulder C in the quadrant and working the large ejector; and the vacuum and steam brakes can both be applied together by pulling the lever over to the full extent of the quadrant.

AUTOMATIC VACUUM BRAKE.

When working trains with the automatic brake, the split pin attached to the quadrant of the driver's brake valve must be placed in hole marked B.

To keep the train brakes "off," the vacuum must be obtained by the big ejector before starting; this will charge all the vacuum reservoirs throughout the train. After the vacuum is created, it must be maintained by the small ejector, and the vacuum gauge in the rear van must register at least 15 in., and the driver must receive a signal that such is the case before starting.

When the vacuum is being maintained satisfactorily, the driver should note the index on the wheel of the small ejector steam valve, for the convenience of re-setting after the valve has been closed for any purpose.

The steam brake cannot be used alone when the engine is attached to a train, but the vacuum brake can be applied alone by means of the ordinary release valve on the right or left-hand side of the footplate, as the case may be. And the steam and vacuum brakes can be applied together by pushing the driver's brake valve handle right over to the full extent of the quadrant.

When stopping in the ordinary course, it will not be necessary to close the small ejector steam valve whilst applying the vacuum brake, but if a specially quick stop is required it should be closed.

When disconnecting the engine from a train, the hose-pipe on the first vehicle should be replaced on its stop plug as quickly as possible to prevent the vacuum throughout the train pipe from being entirely destroyed.

SHUNTING.

Vehicles cannot be shunted out of a train which is arranged for automatic working without the vacuum is first destroyed on such vehicles; this may be effected either by placing the handle on the side of the frame in the "simple" or in the "release" position, or by pulling a wire under the frame, which will be found on those vehicles fitted to work simple or automatic; this allows the air to enter the vacuum reservoir and the top of the sack, and so releases the brake.

BRAKE GETTING OUT OF ORDER ON A JOURNEY.

If the brake on any vehicle should get out of order on a journey, the handle on the side of the frame must be placed in the "cut off" position; this will prevent the brake working on that vehicle, but will not interfere with the working of the brake on the remainder of the train.

F. W. WEBB,
Locomotive Superintendent.

TO BRAKE ATTENDANTS, CARRIAGE COUPLERS, GUARDS, &c.

Instructions for Working the Automatic Vacuum Brake.

DESCRIPTION.

1. The automatic brake is continuous throughout the whole length of the train—each vehicle carrying its own reservoir and cylinder, which are connected by a branch pipe to the main train pipe. Should a train fitted with this brake become divided when running, the hose-pipes will become detached, and the brake will go on throughout each portion of the train.

2. The brake power available depends upon the amount of vacuum maintained by the driver.* It is therefore strictly necessary that not less than 15 inches of vacuum be maintained in the rear van whilst the train is in motion.

3. There are two gauges in the van, one showing the amount of vacuum in the train pipe, and the other the amount of vacuum in the reservoir.

4. The brake is applied by the driver admitting air into the main train pipe, or by the guard pressing down the lever of the valve fixed on the iron pipe erected near his seat. The guard must only apply the brake in cases of emergency. The lever must be held down until the needle of the train-pipe gauge goes back to zero.

5. When a sudden application of the brake is made, the valve in each guard's van will open automatically, thereby admitting air into the main train

* The regulation as to the number of inches to be maintained will be shortly revised, and fresh instructions issued.

pipe, and thus ensuring a rapid application of the brake.

6. The brake is released by the driver re-creating the vacuum throughout the whole train. When the engine is detached the brake can be released by moving the lever fixed on the sole bar, from "auto." to "release" or "simple," the hose-pipe being first taken off the stopper at one end of the train or vehicle.

STARTING.

7. In order that engine-drivers, before starting from stations with trains fitted with the automatic brake, may know when the brake connexions are complete, the man whose duty it is to couple up the hose-pipes must, as soon as the work is done, go to the guard and tell him all is ready for the vacuum to be created. The driver must not open the ejector until the guard, by exhibiting steadily a white hand signal, indicates that he may do so.

8. Before giving the signal for a train to start, the rear guard must satisfy himself that both the gauges in his van indicate at least 15* inches of vacuum, and that both gauges indicate the same amount of vacuum.

If the gauges do not show the proper amount of vacuum, the guard must hold up steadily a white hand signal towards the driver, and continue to exhibit it until the necessary vacuum is created.

When the gauges show that the proper amount of vacuum has been created, the brake must be tested by the guard applying it from the rear van.

The driver will recreate the vacuum, and no further brake signal will be given.

9. This test must always be given by the guard before starting the train from the station at which it was made up, or from any place at which the continuity of the brake has been interfered with by engines or vehicles being attached or detached.

10. Where two engines are attached to a train, the hose-couplings between the engines must be connected, and the driver of the leading engine will be responsible for the working of the brake.

DURING JOURNEY.

11. Guards must see that during the journey nothing is allowed to obstruct the action of the lever of the emergency valve in the brake vans.

12. If, during the journey, the guard should notice anything wrong with the brake apparatus, or should the vacuum gauges show less than 15* inches, he must call the driver's attention by pulling the communication cord and showing to the driver a green flag or hand lamp. This will signify to the driver that the automatic brake must not be entirely relied upon for pulling up the train at the next stopping station, and the guard must be prepared to assist the driver with his hand brake. In the case of trains not fitted with communication cords, the guard must apply his hand brake, when approaching the next stopping place, in sufficient time to bring the train to a stand at the platform without the aid of the vacuum brake, and must advise the driver of the state of the gauges in his van before proceeding.

13. In foggy weather the driver must bring the train to a stand immediately the cord is pulled.

14. Any irregularity or special circumstances in connexion with the working of the brake, or defect in its action, must be reported by the guard in charge to the superintendent of the line, as well as on his journal. The Carriage Department staff must be advised at the next stopping station. Guards must record in their books the amount of vacuum registered on the gauges occasionally during the journey.

15. The continuous brakes throughout the train being under the control of the driver, the use of the

hand brake in the vans is not required for ordinary stops, but guards must be prepared to apply the hand brake immediately on its being called for by the driver's whistle, and must in all cases use their hand brakes to stop trains on approaching terminal stations, bay sidings, or principal stations, and must not rely on the driver's pulling up trains by means of the vacuum brake.

16. In case of a break-loose the guard in the rear van must put the hand brake hard on, and place the chain on the wheel before going back to protect his train.

CUT-OFF ARRANGEMENT.

17. When the brake gear on any vehicle is out of order, from leakage or any other cause, the lever on the carriage underframe must be moved into the cut-off position; this will prevent the brake gear from working on that vehicle, but will not interfere with the brake on the remainder of the train.

SHUNTING.

18. When vehicles have to be moved after the engine is detached, it must first be seen that the hose-pipe at one end is off the stopper. The brake must be released as shown in paragraph 6. *Care must be taken that the lever is returned to the automatic position after the brake has been released.*

19. It is the duty of the fireman, when the engine is attached to the train, to connect the hose coupling on the engine to that on the train; and it is his duty, when the engine is separated from the train, to place the hose coupling of the front carriage on to the stopper provided for the purpose.

Foreign companies' vehicles fitted with vacuum brake must be placed in rear of London and North-Western passenger trains in which the automatic brake is in use, and the pipes not coupled up. If, however, the foreign vehicles are fitted with an apparatus for cutting off the brake cylinder from the main train pipe, and the brake can be put out of gear by means of such apparatus, the pipes may be coupled up, and the vehicles marshalled in the proper position on the train.

G. FINDLAY,
General Manager.

Euston Station,
June 1890.

LONDON AND SOUTH-WESTERN RAILWAY.

Instructions to Enginemen, Guards, Carriage Examiners, and all others concerned, as to the use of the Continuous Automatic Vacuum Brake.

Description.

1. The automatic vacuum brake stops the train by the application of the brake blocks to the tyres of the carriages in the same way as the ordinary screw brake, but the levers which apply the blocks, instead of being worked by a screw, are worked by a piston actuated by atmospheric pressure in a cylinder.

2. The following are the principal parts of the apparatus on the carriages:—

The cylinder.

„ piston or diaphragm.

„ ball valve.

„ main train pipe.

„ flexible branch pipe, connecting bottom of cylinder to train pipe.

„ vacuum chamber, connected to top of cylinder.

* The regulation as to the number of inches to be maintained will be shortly revised, and fresh instructions issued.

The miniature sack, to prevent the admission of air to the bottom of piston.

- „ release lever or ball valve, connected to each side of carriage underframe by wire cord.
- „ dummy.
- „ “Universal” hose and coupling.

3. By means of the ejector placed upon the engine the air is drawn out of the main train pipe, and from the top and bottom sides of the piston or diaphragm in the cylinder through the flexible branch pipe and through the ball valve from the vacuum chamber, so that in running a vacuum should be maintained throughout the system of 20 inches, and certainly not less than 15 inches.

4. *Brake on.*—The brake is operated either by the brake valve on the engine in connexion with the main train pipe or by the guard pressing downwards the lever of the van valve, which is likewise connected with the main train pipe. The effect of this is to admit air to the train pipe, and thence through the flexible branch pipe to the bottom side of piston, thereby applying the brakes, the top side and vacuum chamber maintaining the vacuum through the action of the ball valve, which closes immediately air is admitted to the train pipe.

On a full application of the brake—from whatever cause—all the van valves in the train will open automatically and admit air through each van valve simultaneously, thus obtaining a more rapid application of the brake.

5. In the event of a train parting, the “Universal” hose and couplings will, without damage, become detached, and the brakes will immediately apply themselves.

6. *Brake off.*—In order to release the brakes the driver must move the lever of brake valve on the engine to the position marked “off,” when the ejector will at once re-create the vacuum throughout the system as before described, thus allowing the piston to fall by its own weight and thereby release the brakes.

7. To release the brakes on any carriages that require to be shunted, in the event of the engine not having done so before being detached from the train, the ball valve must be opened on those carriages by means of a small wire cord which is placed on either side of the carriage underframe. This admits air to the vacuum chamber and top side of piston, thus restoring equilibrium on both sides of piston, under which conditions the brakes fall off by their own weight.

8. A dummy is provided to which the rear coupling must always be attached.

Instructions for working.

9. In the formation of trains, the coaches fitted with the automatic vacuum brake must be placed together next to the engine, so that the automatic vacuum brake may be used.

10. The brake can be applied throughout the whole of the vehicles fitted with the apparatus by the engine-man from the engine or by the guard from his van, as before described; but in order that this may be done, it is imperative that the flexible connexions between each carriage and between the engine and the train be properly coupled up; also that the flexible connexion on the last vehicle fitted with the brake be placed on the dummy provided for that purpose as described in clause 8.

11. The brake must be used for ordinary stops, but must not be applied with full force except in cases of emergency. For ordinary stops, and particularly when approaching junctions where timed to stop, engine-men must be careful to reduce the speed, so that a moderate application of the brake will suffice.

12. Guards must not apply the automatic vacuum brake except in cases of absolute necessity, and whenever they do so a full and special report of the circum-

stances must be made, and the occurrence must also be notified on their journals; they must at all times be ready to apply the hand brake should the driver call for assistance.

13. In approaching terminal stations, or stations at which other trains may be standing on the same line of rails, the vacuum brake must not be used except in cases of emergency, but the speed of the train must be so reduced that it may be brought to a stand by means of the hand and steam brakes alone.

14. In descending inclines the engine-man must use the automatic vacuum brake in preference to the hand and steam brakes.

15. In running through slip stations after a slip carriage has been detached, the vacuum brake must not be used excepting in cases of emergency. If it is necessary to control the speed of the train, the hand brake must be employed; in any case the greatest caution should be used to prevent the slip carriage overtaking the train.

16. *Guards.*—The guard before giving the signal to start at the commencement of the journey, and at stations where any of the flexible pipes have been coupled or uncoupled, must ascertain and inform the engine-man—

- (a.) That all the flexible pipes are properly coupled up continuously throughout the train, and that the flexible pipe of the last brake vehicle is properly placed upon the dummy.
- (b.) The number of vehicles in the train fitted with the brake the flexible pipes of which are coupled up to the engine.
- (c.) The number of inches of vacuum indicated by the gauge in the rear van.

17. *Engine-men.*—The engine-man before starting at the commencement of the journey, and also at stations where any of the flexible pipes have been coupled or uncoupled, must ascertain from the guard the number of vehicles in the train fitted with the brake the flexible pipes of which are coupled up to the engine, and the number of inches of vacuum shown by the gauge in the rear van.

He must also be careful to see—

- (a.) That the vacuum pipe of his engine is properly coupled up to the leading vehicle in the train.
- (b.) The number of inches of vacuum indicated by the gauge on the engine.

18. If from any cause the engine-man is unable to obtain at least 15 inches of vacuum he must inform the guards of the fact, and the train must be worked forward with the ordinary hand and steam brakes, and he must report on his daily brake return when he is not able to obtain 20 inches.

19. When the pipes between the engine and train are disconnected, the couplings must be placed on the dummies provided for that purpose. Detached carriages must always have the hose couplings placed on the dummies.

20. At any station where the driver is informed that vehicles are to be attached to or taken off the train, the vacuum in the main train pipe must be destroyed, as described in clause No. 7, so that there may be no delay in coupling or uncoupling.

21. In the case of vans fitted with the combined hand and vacuum brake, the guard must see before starting that the hand brake is screwed full “off” and the handle secured by means of the chain provided for the purpose.

22. It is necessary that the forms specially provided for the purpose should be made out daily by engine-men working automatic vacuum brake trains, and be left with the daily return each night, and if from any cause the brake is not used, or there is any irregularity in its working a remark must be made by the driver on the form to that effect, and also by the guard on his journal.

The guard must also make a special report of the occurrence.

23. When vehicles are supplied with connecting pipes only, they must be considered as vehicles without the brake, but the brake connexions must be made as described in clause 10.

24. When vehicles not fitted with a continuous brake or having connecting pipes only, are attached to a train fitted with such brake, or to an engine having the brake on the engine wheels as well as the tender wheels, the guard in the rear van must, immediately upon the continuous or engine brake being applied by the driver, apply his hand brake, and keep it tightly on, either until the train has come to a stand or the driver has taken off his brake, and is again going forward, as the case may be. This arrangement is necessary to prevent the rebound of the carriages and possible breaking of the drawbars which may occur when a powerful brake is applied to the front portion of the train only.

W. ADAM,

Locomotive and Carriage Superintendent.

E. W. VERRINDER,

Traffic Superintendent.

London, November 1882.

LONDON, BRIGHTON, AND SOUTH COAST RAILWAY.

WESTINGHOUSE AUTOMATIC AND CONTINUOUS BRAKE.

Description and instructions for working.

DESCRIPTION.

Compressed air is the agent employed to apply the brake. The air is compressed by a small engine and pump placed on the locomotive. The driver or any of the guards can apply the brake, *and it applies itself, in the case of a break-away, or the failure of its main pipe or couplings.*

The tender and each of the vehicles of the train are fitted with the following parts:—(1) a triple valve, (2) a supplementary air reservoir, and (3) a cylinder with piston; the latter in connexion with (4) the brake lever and blocks.

When a train is made up and ready to start, and also when it is running, compressed air stands at equal pressure throughout its length, that is to say, in the main reservoir, in the pipe from end to end of the train, and in the triple valve and supplementary reservoir on each vehicle.

To apply the brake, air is allowed by the driver to escape, or in an emergency, by any of the guards. This causes the triple valves to move down, the air stored in the supplementary reservoirs to pass instantly into the cylinders, the pistons and rods to be forced out, and the blocks to press against the tyres of the wheels.

To release the blocks from the wheels, air is allowed to pass from the main reservoir along the train. This moves the triple valves up, re-charges the supplementary reservoirs, and at the same time allows the air which had forced out the pistons to escape into the atmosphere.

INSTRUCTIONS.

Drivers must see (1) that the steam cylinder is kept well lubricated, (2) that the air pump is sparingly lubricated with a small quantity of mineral oil—tallow or lard oil must not be used in the air pump,—(3) that the pump is constantly run, but *never faster than is necessary to maintain the required air-pressure*, say for stopping trains 60 lbs., and for express trains 85 lbs.

The brakes must not be used with more than half the full force, except in case of danger.

The brakes are fully set when the pressure shown on the gauge is reduced 25 lbs. Any further reduction would be waste of air.

To apply the brakes lightly, the tap must be partially opened and gently closed when the pressure has been reduced from 4 to 8 lbs.

In releasing the brakes the handle must be moved against the stop and kept there for about five seconds, and then moved back just far enough to stop the flow of air from the small hole in the top of the tap.

Drivers, upon feeling the brakes are applied, must at once aid in stopping the train by turning the three-way cock and preventing escape of air from the main reservoir.

Guards.—After making up or adding to a train, or after another engine has been attached, the rear guard must ascertain whether the brake is connected throughout by examining the pressure in the gauge, slightly opening its escape tap, and ascertaining that air escapes, or, when a van is not the last vehicle, by opening the rear tap in the brake pipe.

Guards, when they have occasion to apply the brake from a van, must hold the handle and allow the air to escape until the train is brought to a standstill, but must only use the brake in case of emergency.

Guards must, in all cases, screw the hand brakes clear off before starting.

General.—Before detaching the engine, the brakes must be fully released on the whole train. Neglecting this precaution, or setting the brakes by opening a valve or tap when the engine is away, may cause serious inconvenience in shunting. The pipes and joints must be kept tight, and when leaks are discovered they must be corrected, if serious, before the vehicle is again used.

The brake pipe has a tap at each end of every vehicle, all of which taps should be open when the hose couplings are united, except the one at the rear of the train. These taps must always be opened *after* connecting the hose couplings, and closed *before* separating them.

If the brakes are applied by the separation of the train, or the breaking of a pipe, they can be released by opening the small taps in the brake cylinder or pipes leading thereto. These taps, after the release of the brakes, must be closed. If the brakes are applied after the engine has been disconnected, they can be released as above, or by again connecting.

It is important to observe that the taps at the ends of the vehicles are open when the handles stand across, or away from the line of pipe, and closed when parallel to, or alongside the pipe.

When the handle of the tap of the triple valve stands across, or away from the valve, it is set for the automatic brake. When against the stop at an angle of 45°, the brake is thrown out of use on the carriage.

Care must be taken (1) that the brake connections are perfect, and properly adjusted for the wear of the blocks and wheels, (2) that the brake cylinders are perfect and lubricated occasionally with *mineral oil*, and (3) that the couplings and other parts are tight.

Carriage examiners must see that the cocks under each carriage are in their proper position before the train starts, so that it may not be delayed on the journey.

Shunters in all cases, after coupling the connexion pipes, must open the cocks at the end of each carriage except the last, so as to complete the brake throughout the train. In uncoupling, the connexion pipe cocks must be shut, but before doing so, shunters must satisfy themselves that the driver has taken the brake off, and that the hand brake at the rear of the train has been applied.

No person must tamper with the tap in the brake van, as by so doing the brake is instantly applied, and cannot be taken off again except by opening the cock under each carriage, or attaching the engine to the train.

Engine-drivers and guards are not to depend entirely upon the action and power of the brake, but, when approaching terminal stations, or junctions, must have their trains well under control, so that the trains can be brought to a standstill with the hand brakes, if necessary.

The engine-drivers and guards must ascertain before the departure of the train if the automatic brake is complete throughout the train.

Trains fitted with this automatic brake must not approach and enter terminal stations at a speed greater than that which has been usual with trains worked by the ordinary hand brake.

J. P. KNIGHT,
General Manager.

London Bridge,
16th April 1878.

LONDON, CHATHAM, AND DOVER RAILWAY.

WESTINGHOUSE AUTOMATIC AIR-BRAKE.

Notice to engine-drivers, guards, carriage examiners, shunters, and all concerned.

Where engines fitted with the Westinghouse brake are attached to trains wholly or partly fitted with this brake, the engine connexion must always (where possible) be coupled up to the leading vehicle and the brake made complete as far as can be throughout the train. Guards of such trains will inform the drivers how many vehicles are so connected to the engine.

The guards working these trains must not work their ordinary hand-brakes unless the engine-driver whistles for them to do so, and they must on no account put on the patent brake unless they should see anything wrong with the train or on the line which would necessitate it being pulled up at once.

The engine-drivers and guards must ascertain before the departure of the train if the patent brake is complete throughout the train.

Guards, before leaving *terminal stations*, and also after connecting the *City* portion at *Herne Hill*, must ascertain that all the hose couplings are connected, and the cocks in the brake pipes are open throughout the train by applying the brake (after the engine is attached) from the rear van, or, if the van is not at the end of the train, by opening the cock in the brake pipe at the rear of the last vehicle.

Carriage examiners, before the train starts, must see that the cocks under the carriages connecting the *triple valves* with the main brake pipe are full open, and that the release valves on the brake cylinders are in proper working order with the pull chains for opening them attached to the sides of the under frame.

Shunters and Porters, after connecting the hose couplings, *must open the cocks* at the end of each carriage, except the last, so as to complete the brake throughout the train. Before separating the hose couplings *these cocks must be closed*.

No person must tamper with the valve in the brake van, as by so doing the brake is instantly applied, and cannot be taken off again except by opening the cock under each carriage, or attaching the engine to the train.

The brake is not in force between *Holborn* and *Herne Hill*, the engine working the *City* part not being fitted with it.

The coaches fitted with the patent brake must be kept for the trains above described, *and must not on any account be used in any other trains*. Guards to report any disregard of this order.

On approaching terminal stations, drivers must take care to have their trains well under control, so that, if necessary, trains may be brought to a standstill by hand-brake.

THE VACUUM AUTOMATIC BRAKE.

This Brake can be applied throughout the train by the driver from his engine, or by the guard from his van.

Drivers' Instructions.—Before starting see that your gauge indicates at least 18 inches of vacuum. This is done by admitting steam to the small ejector by means of a steam cock placed for that purpose. To apply the brake move the lever on the combination ejector

to "on." In ordinary running this lever must stand at "running position." To release the brake move the lever to position "off." *When the vacuum is suddenly destroyed in the main pipe the brake is full "on."* When separated from your train see that the couplings are placed upon the dummies fixed for that purpose.

Guards' Instructions.—To apply the brake press down the lever on the valve placed in the guard's van. This admits air throughout the train pipe, and is to be only employed in cases of emergency. This valve opens automatically when the brake is applied with full force by the driver, and ensures rapid action. See that all pipes between carriages are properly coupled together, and that the couplings on the end coaches are placed upon the dummies. See by your gauge that a vacuum of 18 inches is maintained. Report otherwise to driver.

General Instructions.—To release the brakes for shunting purposes (the engine having left the train), first see that the hose coupling at one end of the train is off the dummy, then pull the cord which is fixed under the body of each carriage as indicated by the arrows. This admits air to the top side of the cylinder, and the brakes come off by gravity.

March 1885.

LONDON, TILBURY, AND SOUTHBEND RAILWAY.

INSTRUCTIONS AS TO WORKING THE WESTINGHOUSE CONTINUOUS BRAKE.

Description.

Compressed air is the agent employed to apply the brake. On the engine there is a donkey pump for compressing air into a main reservoir. There is one 13 in. brake cylinder for the driving wheels, and one 8 in. for each other vehicle. A single line of pipe extends the entire length of the train. On the engine and each vehicle is a triple valve having one connexion with main pipe, and second connexion to a reservoir on each carriage, and a third connexion to the brake cylinder. The pipe from the main reservoir leads to a valve and thence to the train. This valve is operated by the driver, who, by the movement of the handle in one direction, admits air to the main pipe from the main reservoir in order to charge the small reservoirs and release the brakes when they are applied, and by moving it in the opposite direction, discharges air from the brake pipe to the atmosphere, and so applies the brakes. If a train breaks in two, the couplings come apart so as to permit the escape of air and the consequent application of the brakes. Similarly, if the pipe is fractured, the brakes are at once applied.

The operation is as follows:—The pump is started and air is compressed into the main reservoir. When the engine is coupled to the train, air passes into the pipe, triple valve, and reservoir on each carriage, charging all equally.

To apply the brakes, the pressure is lowered in the brake pipe by the driver operating his valve. This causes the triple valve to move so as to open a passage for the compressed air from each reservoir to its brake cylinder, the piston of which applies pressure to the levers and brake blocks.

The brakes are fully set when a reduction of pressure to the extent of 25 lbs., shown by the gauge, has been obtained; any further reduction is a waste of air.

The brakes are released by admitting air from the main reservoir to the brake pipe, which re-charges the pipe and triple valves and reservoirs, whilst at the same time a passage is opened from each cylinder to the atmosphere. A cock is placed between each triple valve and the main pipe, so that the brake on any particular carriage can be put out of use. The brakes of the detached portion of a train, if applied, can be released by holding open a valve on each brake cylinder. These release valves close automatically

when not held open to release the brakes. There is a cock in each van to apply the brakes, and a gauge on the engine, and in each van to indicate the pressure in the main pipe; there is also a gauge on the engine to indicate the pressure in the brake cylinder.

Instructions.

Drivers must see:—(1) that the top, or steam cylinder of the air pump is kept well lubricated; (2), that the air cylinder is sparingly lubricated with the lubricator provided for the purpose; (3), that the pump is constantly run, but never faster than is necessary to maintain the required air pressure; and (4), that air from 60 to 65 pounds pressure is carried.

For ordinary stops the brake should be applied lightly, by turning the handle of the driver's valve to the right, and gently closing it again, after a reduction of pressure in the brake pipe of not less than 5 lbs. nor more than 8 lbs. has been made. If the pressure runs up on the gauge when the handle is brought back, it shows that the valve has been shut too quickly.

In ordinary working the brakes are fully applied when the pressure shown on the gauge is reduced 25 lbs.; any further reduction is a waste of air. In case of emergency, however, the handle must be turned so as to let all the air in the brake pipe escape.

Long trains require more careful handling than short trains, and a greater quantity of air must be discharged from the brake pipe to make the same reduction per square inch on the gauge. The driver, before starting, must ascertain the number of vehicles on the train and the number working with brakes or pipes only.

In releasing the brakes, the handle should be kept in release position until the pointer of the indicator shows signs of rising and then be moved back against the intermediate stop, which is the feed position, where it must remain whilst the train is running.

The driver must always satisfy himself that the brake coupling on his engine is properly connected to that on the train, and that the cocks in the brake pipe, *except the one at the rear of the last vehicle connected with the Westinghouse brake* are open.

The blocks of the driving wheel brake should be so adjusted, by turning the screw, that the pistons travel from 3 to 4 inches.

The driver must be careful to drain the water out of the main reservoir once a week, and in frosty weather more frequently.

If vehicles, having different air pressures, be coupled together, the brakes will apply themselves on those which have the highest pressure. To ensure the certain release of all the brakes in the train, and in order that the train may be charged quickly, the driver must carry the maximum pressure in the main reservoir before connecting to the train. When coupled to the train, he must put the handle of his brake valve in the release position until the train is charged with air, and this is shown to have taken place when the pointer of the indicator begins to rise. If the brakes on the engine are found to apply themselves when the engine is coupled to a train not charged they should at once be taken off by opening the release valve from the brake cylinders.

After connecting the engine to the train, or after new vehicles have been added, the pipes and reservoirs should be charged as quickly as possible. The brakes should then be applied with full force by the driver, who should not start away until the inspector or guard has signalled that the brakes are acting on all the vehicles.

The driver, before commencing a journey, must inform the guard whether the engine is fitted with the brake apparatus or not, in order that he may know how to act as to the use of the hand brakes.

Should the driver discover any defect in the working of the brake which will render it ineffective, he must at once give the guard notice, and arrange with him as to the use of the hand brake in the van, when necessary.

In running into stations with block ends, and at junctions where he has to stop, and also when moving up to attach his engine to a train, the driver must not rely upon the continuous brake, but must so regulate the speed of his engine that the ordinary application of the hand brakes on the engine will be sufficient to bring the train or engine to rest. In ordinary stoppages at stations, the driver must use the brakes so as to stop the train without any jerk.

The brakes must not be used with more than half their force, except in cases of emergency.

When working the Westinghouse brake with two engines coupled together, the driver of the leading engine must take charge of the brake, and he must work it as he would on an ordinary train, not considering the second engine, except as a vehicle.

The driver of the second engine must keep his handle in the neutral position, and the donkey pump working; by this means he shuts off all communication from the main reservoir to the main pipe of the train.

The driver, on finding that the brakes have been applied by the guard, or automatically, must at once aid in stopping the train by turning the handle of the driver's valve towards the right, thus preventing escape of air from the main reservoir.

The driver must enter on his engine ticket all cases of irregularity in the working of the brakes.

Guards.—Before commencing a journey must ascertain from the driver whether the engine is fitted with the Westinghouse brake apparatus or not, and before leaving the terminus, or after adding to a train on the journey, or on another engine being attached, the rear guard must ascertain whether the couplings are connected, and the cocks in the brake pipe are all open (except the one at the rear of the last vehicle connected with the Westinghouse brake) throughout the train by applying the brakes from his van and seeing that *they are released from the engine*. In making this test the pressure of air in the pipes, as shown by the indicator, should not be reduced more than is absolutely necessary. If the Westinghouse brake is not in use on the whole train, or if the guard's van is not the last vehicle, the test should be made by opening the cock in the brake pipe of the last vehicle connected.

A guard, if he should have occasion to apply the Westinghouse brake from his van during the running of the train, must open the tap and allow the air to escape until the train is brought to a standstill, but he should only use the Westinghouse brake in cases of emergency.

In running into stations with block ends, and on approaching junctions where the train may have to stop, the guards must be especially prepared to assist the driver by the ordinary application of their hand brakes to bring the train to rest.

The guards must, in all cases, screw the hand brakes clear off before starting.

The guard must enter, on his report, all cases of irregularity in the working of the brakes.

Examiners (Locomotive Department).

Examiners must see:—(1) That the brake connexions are perfect and properly adjusted for the wear of the blocks and wheels by being uniformly taken up. The pistons of double piston cylinders should each travel not less than two, nor more than four inches. Those of single piston cylinders should not travel less than four, nor more than eight inches. (2) That the brake cylinders are perfect and lubricated at least every three months with mineral oil. (3) That the hose couplings are united, and the cocks in the pipes, except the one at the rear of the last vehicle connected with the Westinghouse brake, are open, that is, the handles must stand across or away from the pipe, except the one at the rear of the last vehicle connected with the Westinghouse brake, which must lie along the pipe in the shut-off or closed position. (4) That the joints are all air-tight.

General.—Before detaching the engine or any carriages the brakes must be fully released on the whole train. Neglecting this precaution, or setting the brakes by opening a valve or tap when the engine is away, may cause serious inconvenience in shunting. The pipes and joints must be kept tight, and when leaks are discovered they should be corrected, if serious, before the vehicle is again used.

The brake pipe has a tap near its junction with the hose coupling at each end of every vehicle, and these taps must always stand open between each vehicle when the hose couplings are united, and always closed when the hose couplings are not united. After connecting two hose couplings these taps must always be opened, but before separating two hose couplings these taps must always be closed.

The taps are open when the handles stand away from, or at right angles with, the brake pipe, and closed when the handles lie along, or in the same direction as, the brake pipe.

If the brakes are applied by the separation of the train, or the breaking of a pipe, they can be released by opening the small release valves in the brake cylinder or pipes leading thereto. These taps after the release of the brakes must be closed.

If the brakes are applied after the engine has been disconnected, they can be released as above or by again connecting to the engine.

The brake of any vehicle can be put out of operation without affecting the others, by closing the tap under that vehicle, between the brake pipe and triple valve.

No person must tamper with the tap in the brake van, as by so doing the brake is instantly applied, and cannot be taken off again except by opening the cock under each vehicle, or by attaching the engine to the train.

Station masters, inspectors, guards, shunters, and all members of the staff concerned in the working of the trains, must make themselves thoroughly acquainted with the whole of these instructions.

ARTHUR L. STRIDE,

Engineer and Manager.

MERSEY RAILWAY.

VACUUM CONTINUOUS AUTOMATIC BRAKE.

All engines and carriages owned by the Mersey Railway are fitted with this brake apparatus.

This can be applied throughout the train by either the driver from the engine or the guard from the brake-van. The engines of the new "Victoria" class are fitted with the vacuum brake, but in engines of the old "Major" class, the apparatus, although worked from the engine, does not put on the brakes on the engine or tender, a steam brake being supplied for this purpose, which applies itself automatically whenever the vacuum brake is used, but can also be used independently.

The continuous brake must be used by the drivers for all stoppages, but the guards must not make use of it except in cases of absolute necessity, and whenever they do so, a full and special report must be made of all the circumstances, the fact being also noted on their daily report.

The amount of brake power at command depends upon the amount of vacuum obtained, and before starting, the driver must see that the gauge indicates at least 18 inches of vacuum. This is obtained by admitting steam to the small ejector by means of the steam cock provided for the purpose. To apply the brake, move the lever on the brake valve to "ON." In ordinary running this lever must stand at "RUNNING POSITION." To release the brake the lever should be in the position "OFF." When the vacuum is suddenly destroyed in the main pipe the brake is full "ON."

When the guard has occasion (*in emergency only*) to apply the brake he must press down the lever on

the valve placed in his van. This admits air throughout the train pipe and the brake is at once applied. The valve in the van opens automatically when the brake is applied violently by the driver and ensures rapid action, but it must, however, not be so applied except in cases of emergency. The guard must see by his gauge that a vacuum of at least 18 inches is maintained; if it falls below this amount he must at once report the fact to the driver.

In the event of a break loose, the continuous brake will be automatically applied, but the guard in the rear van must not rely solely on this, but must put his hand brake hard on and firmly secure it before going back to protect his train.

It is the duty of the fireman, when the engine is attached to the train, to connect the hose coupling on the engine or tank to that on the train; and it is his duty when the engine is detached to place the hose couplings, after disconnecting them, on the respective plugs provided for the purpose. The driver is responsible for this duty being properly attended to by the fireman.

It is the duty of the shunter or porter to connect the hose couplings between the carriages, and to place the hose coupling in rear of the last vehicle on the plug provided for the purpose. The guard is held responsible for this being done. When trains or carriages are placed in the carriage sheds or sidings at the termination of the day's work, the hose coupling at the end of the train or carriage must be taken off the plug, and the driver, before detaching his engine, must put full steam on the large ejector and blow through for at least one minute while the coupling is off the plug. The coupling can be replaced and the engine detached. The carriage foreman at the Central station and the station inspector at the other stations will be responsible for this being carried out.

When empty trains are left in the temporary sidings in the tunnel east of James Street, or at other places where the gradient is severe, the hand-brakes must be placed hard on before the engines are detached. The guard will be held responsible for this being done.

To release the brakes, after the engine has been detached, the hose coupling at one end of the train must be taken off the plug, the wire fixed under the body of each carriage must be pulled as indicated by the arrows. This admits air to the top side of the cylinder and the brakes fall off by gravity. It is the duty of enginemen in every instance, *before taking their engines out of the shed*, to test the apparatus on both engine and tender, and also when engine is fitted with STEAM BRAKES, whether in addition to the vacuum brake or otherwise, they must be tested with full steam pressure.

Enginemen must always test the continuous brakes, to satisfy themselves that they are in proper working order, after their engines are attached to the trains and immediately before starting.

Drivers must have their trains under such control when approaching terminal stations as will enable them if necessary to stop at the required place, by using only the engine steam brake and guard's hand brake.

METROPOLITAN RAILWAY.

INSTRUCTIONS FOR WORKING THE VACUUM BRAKE.

I. All trains on which this brake is fitted will be controlled by the driver only, unless the guards are specially called upon to apply their brakes by the usual whistle signal.

II. In using this brake, the force to be applied must not exceed 15 inches on the vacuum gauge, and drivers must shut off steam and apply the brake, so that the stoppage can be properly effected with this power.

III. The excess of power beyond 15 inches of vacuum is not to be used except in cases of emergency, such as an unusual stoppage, or accident to train or engine.

IV. Before starting with the train, the driver is to test the connecting pipes to see if they are properly coupled up, by turning steam into the ejector. If all is right, the gauge will show it by the pointer remaining where carried by the vacuum.

V. The use of this brake is intended to give greater certainty in making stoppages, and to prevent the skidding of wheels.—Any driver, therefore, who recklessly runs into a station, and skids the wheels to stop, will be severely punished.

VI. In approaching all terminal stations, viz.:—New Cross, Aldgate, Moorgate (North Dock), Baker Street East, Hammersmith and Richmond, the train must be completely under control before the engine reaches the platform, so that a careful stop may be made, if necessary, by the hand brakes of the engine only; and the guards must be prepared to assist with hand brakes if required. Should it be necessary for the drivers to use the vacuum brake, a special report must be made detailing the circumstances.

VII. Should an engine fitted with this brake have any defect in the ejector or pipes, the driver must, before starting with the train, give the guard notice that the hand brakes will require to be used, so as to avoid the necessity for calling on him to apply the brake on approaching each station.

VIII. The guard, before starting with a train, must see that the engine is properly fitted with the vacuum brake, as should it not be so the hand brakes must be used in the usual way.

JOHN BELL,
General Manager.

May, 1889.

MIDLAND RAILWAY.

AUTOMATIC VACUUM BRAKE.

This brake can be applied throughout the train by the driver from his engine, or by the guard from his van.

Instructions to drivers.—Before starting from any station, see that your gauge indicates 20 inches of vacuum, and that not less than this amount is maintained during the journey, and while standing at stations.

To apply the brake, open the air valve on the engine.

To release the brake, close the air valve and restore the vacuum to the same amount as existed before the application.

When the engine is attached to the train and the brake pipes are connected, put on the small ejector, and keep it on while at the stations, and during the journey, in order that a constant vacuum may be maintained.

The brake must be applied steadily, which can always be done by opening the air valve gradually; but in a case of emergency the valve must be pulled open suddenly. The large ejector may be used to raise a vacuum rapidly, or when the brake requires to be taken off quickly; but in either case it must be closed gradually.

Instructions to guards.—After the engine is attached to the train the guard in charge must ascertain whether the brake is coupled up and in working order throughout the train, and between the train and the engine. This must be done by lifting the brake valve a little in the rear van, when, if there is an inrush of air through the valve, the brake will be all right; but if no inrush takes place, the guard must inform the driver that there is no vacuum in his van.

To apply the brake, lift up the valve, which will admit air throughout the brake pipe, but this is only to be done in a case of emergency. The valve opens automatically when the brake is applied with full force by the driver, and ensures rapid action. See that all pipes between the vehicles are properly coupled together, and that the coupling is on the stop plug at

the rear of the train. See by your gauge that a vacuum of 20 inches is maintained, and report, if otherwise, to the driver.

The needle on the left-hand side of the gauge in the guard's van indicates the amount of vacuum in the brake pipe.

The needle on the right-hand side of this gauge indicates the amount of vacuum in the reservoir.

When the brake is applied fully, the needle on the left-hand side will go to "O," and the needle on the right-hand side will only gradually go down as the vacuum in the reservoir leaks away.

The small tap between the two pipes below the gauge will enable the guard to shut off the leakage on the van.

When the handle of the tap is turned to the "leak-off" position, the continuous brake will work the same on the guard's van as on the other vehicles, but when the handle of the tap is turned to the "remain-on" position, the brake will not leak off the van.

In the event of a train becoming divided when going up a rising gradient, the guard must, in addition to turning the tap to the "remain-on" position, also apply his hand brake tightly, and take such other measures as may be necessary to prevent the vehicles from moving.

No guard or porter must leave the van with the handle of the tap at the "remain-on" position, except in a case of emergency, when it may be necessary to do so.

General Instructions.—Whenever the pipes between the vehicles are disconnected, the couplings must be placed upon the stop plugs at the end of the vehicles.

To couple the hose pipes the porter must take one in each hand and lift them sufficiently high to hook the bottom horns of the couplings together first, and then by lowering them, place the top horns of the couplings in the slots.

To uncouple the hose-pipes the porter must simply lift them straight up, when the horns at the top will come out of the slots, and the couplings will then separate. Porters, when coupling or uncoupling the pipes, must have their hands quite free from cotton waste or anything else that would be likely to be drawn into the pipes by the suction of the vacuum.

To release the brakes for shunting purposes on vehicles fitted with ball valves (the engine having left the train) first see that the hose coupling at one end of the train is off the stop plug and then pull the cord which is fixed under the frame of each vehicle. This admits air to the top side of the cylinder, and the brake comes off by gravity.

When the release-cord or wire has to be pulled for the purpose of taking the brake off, it must always be held by hand until the brake comes off, and must never be fastened over.

WESTINGHOUSE AUTOMATIC AIR BRAKE.

DESCRIPTION AND INSTRUCTIONS FOR WORKING.

Description.

The air used to apply the brake is compressed by a small engine and pump placed on the locomotive. The driver or any of the guards can apply the brake, and it applies itself in the case of a break-away, or the failure of any of its vital parts.

The engine, tender, and each of the vehicles of the train are fitted with the following parts:—(1) a triple valve, (2) a supplementary air reservoir, and (3) a cylinder with piston rods; the latter in connection with (4) the brake lever and blocks. Upon the engine a main reservoir also is fitted.

When a train is made up and ready to start, and also when it is running, compressed air stands at equal pressure in the pipe from end to end of the train, and in the triple valve and supplementary reservoir on each vehicle, but in the main reservoir the pressure is about 10 lbs. in excess of that in the train.

The brake is *applied* by a decrease of pressure in the main pipe. This causes the triple valves to move down, and to allow the air stored in the supplementary reservoirs to pass instantly into the cylinders, force out the pistons and rods, and cause the blocks to press against the tyres of the wheels.

The brake is *released* by an increase of pressure in the main pipe, by allowing air to pass from the main reservoir along the train. This moves the triple valves up, recharges the supplementary reservoirs, and at the same time allows the air which had forced out the pistons to escape into the atmosphere.

Instructions.

Drivers must see (1) that the top, or steam cylinder, is kept well lubricated, (2) that the air cylinder is sparingly lubricated with a small quantity of refined petroleum—*tallow or oil must not be used in the air cylinder*—(3) that the pump is *constantly run*, but never faster than is necessary to maintain the required air-pressure, and (4) that air from 50 to 60 lbs. pressure for stopping trains and from 70 to 80 lbs. pressure for express trains, is carried.

For ordinary stops the brake must be applied lightly, by opening the valve, and closing it gently when the pressure has been reduced from 4 to 8 lbs. on the gauge.

The brakes are fully applied when the pressure shown on the gauge is reduced 25 lbs. Any further reduction would be waste of air.

In releasing the brakes the handle must be moved quite against the stop and kept there for about ten seconds, and then moved back against the intermediate stop, which is the feed position, *where it must remain whilst the train is running*.

Drivers, upon feeling that the brakes have been applied by the guard, or automatically, must at once aid in stopping the train by turning the handle of the brake valve towards the right, thus preventing the escape of air from the main reservoir.

The blocks of the driving wheel brake must be so adjusted by turning the screw that the pistons move up from 3 to 4 inches.

Drivers must be careful to drain the water out of the main reservoir once a week, especially in winter time.

If vehicles having different air pressures be coupled together the brakes will apply themselves on those which have the highest pressure. To ensure the certain release of all the brakes on the train, and also that trains may be charged quickly, the driver must carry the maximum pressure in the main reservoir before connecting to a train, and then put the handle of his brake valve in the release position until the train is charged with air. If the brakes on the engine and tender thus apply themselves by being coupled to a train not charged they must be at once taken off by opening the release valves from the brake cylinders.

Guards.—After making up a train, after attaching or detaching any vehicle, or after another engine has been attached, the rear guard must ascertain whether the couplings are connected, and the cocks in the brake pipe are all open throughout the train, by applying the brakes from his van, and seeing that *they are released from the engine*. If the brake is not in use on the whole train, or if the van is not the last vehicle, the test must be made by opening the cock in the brake pipe of the last vehicle connected.

Guards, when they have occasion to apply the brake from their van, must open the tap and allow the air to escape until the train is brought to a standstill, but they must only use the brake in case of emergency. The tap in the van must again be closed when the train has come to a stand.

The pressure gauge in the van must be observed.

Guards must, in all cases, screw the *hand-brakes clear off* before starting.

General.—Before detaching the engine or any vehicle, the brakes must be fully released on the whole train. Neglecting this precaution, or setting the brakes

by opening a valve or tap when the engine is away may cause serious inconvenience in shunting. The pipes and joints must be kept tight, and when leaks are discovered they must be corrected, if serious, before the vehicle is again used.

The brake pipe has a tap at each end of every vehicle, all of which must be open when the hose couplings are united, except the one in the rear of the train. *These taps must always be opened after connecting the hose couplings, and always closed before separating them.*

If the brakes are applied by the separation of the train, or the breaking of a pipe, they can be released by opening the small release valves or cocks in the brake cylinder or pipes leading thereto. If the brakes are applied after the engine has been disconnected, they can be released as above, or by again connecting to the engine.

The brake of any vehicle can be put out of operation without affecting the others, by closing the tap under that vehicle between the brake pipe and triple valve.

Care must be taken (1) that the brake connections are perfect, and properly adjusted for the wear of the blocks and wheels, by being *uniformly* taken up. The pistons of the double piston cylinders should each travel not less than two nor more than four inches; and those of the single piston cylinders should travel not less than four nor more than eight inches; (2) that the brake cylinders are perfect, and lubricated at least every three months with *mineral oil*; (3) that the hose couplings are united and the cocks in the pipes are open, that is, the handles must stand across or away from the pipe, except the one at the end of the train, which must lie along the pipe in the shut-off position; and (4) that the joints are all air-tight.

When there are upon a train any vehicles fitted with the Westinghouse brake, and that brake is not in use upon such vehicles, the air must be allowed to escape from the cylinders by means of the release taps under the carriages. This is necessary to avoid the brake leaking on, which it has in several cases, and trains have been delayed.

To enable the staff to readily ascertain whether the vehicles supplied with the Westinghouse brake pipe are fitted with the brake apparatus, or with the connecting pipes only, the cock at each end of all vehicles having connecting pipes only has been painted red.

CONTINUOUS BRAKES.

Should it be necessary at any time to send goods guards or porter-guards in charge of the trains, in lieu of the ordinary guards, care must be taken to ascertain that they are conversant with the working of the continuous brake, and with the instructions in connection with it for the guidance of passenger guards.

Instructions to be observed by Guards working with Continuous Brake Trains, and with Trains worked by Engines fitted with Brakes on the Engine wheels as well as the Tender wheels.

When vehicles are supplied with connecting pipes only, they must be considered as vehicles without the brake.

When vehicles not fitted with a continuous brake, or having connecting pipes only, are attached to a train fitted with such brake, or to an engine having the brake on the engine wheels as well as the tender wheels, the guard in the rear van must, immediately upon the continuous or engine brake being applied by the driver, apply his hand brake and keep it tightly on, either until the train has come to a stand, or the driver has taken off his brake, and is again going forward, as the case may be. This arrangement is necessary to prevent the rebound of the vehicles and possible breaking of the draw bars, which may occur when a powerful brake is applied to the front portion of the train only.

When any vehicle or vehicles provided with connecting pipes only, are attached behind the rear van of a train fitted with either the automatic vacuum or the Westinghouse brake, the pipes must be connected in the same way as if such vehicle or vehicles were fitted with the brake.

Instructions to be observed by Carriage Washers.

Daring frosty weather carriage washers must not allow any wet to remain on the hose pipes or stop-plugs when washing the vehicles, as any water left upon the pipes and plugs would be liable to freeze, and cause inconvenience and delay in fixing the pipes on the plugs.

Continuous Brakes on Scotch Express Trains.

Several of the engines working Scotch express trains are fitted with the Westinghouse and the automatic vacuum brakes, and when a train is being worked by an engine fitted with both brakes, the guard in charge must ascertain whether there are on the train any vehicles fitted with one brake only, and if there are, the brake which can be applied on the greatest number of vehicles must be used, and the driver must be instructed accordingly.

Westinghouse and Automatic Vacuum Brake Hose Couplings.

When any of the engine or carriage hose couplings burst, or become defective, on the road, the driver must draw his train under the protection of the nearest fixed signals while the defective pipe is replaced or repaired by the fireman. In the case of a Westinghouse brake coupling becoming defective, a new one must be substituted for it, and burst or damaged automatic vacuum brake couplings must be wrapped with canvas and tarred string so as to cover the defect.

Padlocks for securing Automatic Vacuum Brake Valves in Brake Compartments of Midland City and Suburban Trains in which no Guard is riding.

A staple is fixed in each brake compartment of Midland city and suburban trains, under the lever of the automatic brake valve, a chain being attached to the lever, and guards are supplied with padlocks and keys for the purpose of fastening the lever to the staple by means of the chain, when no guard is riding in the brake compartment.

Guards will be held responsible for fastening the lever by padlock when necessary, and station-masters must, from time to time, satisfy themselves by personal observation that this instruction is carried out.

G. and S. W. Vehicles fitted with the Automatic Vacuum Ball-Valve Brake.

The position of the cord or wire for releasing the brake on G. and S. W. vehicles fitted with the automatic vacuum ball-valve brake is indicated by a **V**.

Attaching another Company's Vehicles to Midland Passenger Trains.

The continuous brake in use on London and North-western, Great Northern, Manchester, Sheffield, and Lincolnshire, North Stafford, and Caledonian vehicles will not work in unison with the Midland automatic vacuum brake.

When a London and North-Western vehicle fitted with the continuous brake apparatus is attached to a Midland passenger train, the lever on the under frame must be moved to the "cut-off" position, which will prevent the brake from working on the vehicle, and the pipes may then be coupled up in the ordinary way to preserve the continuity of the brake.

On North Stafford vehicles fitted with the continuous brake apparatus there is a handle, painted red, placed at each side of the vehicle, near the centre, and

close under the frame, the object of which is to cut off the connexion between the train pipe and brake cylinder. This handle forms part of a rod extending across the vehicle and provided at each end with three notches. When a North Stafford vehicle has to be attached to a Midland passenger train, the handle must be pulled or pushed into one of the end notches. This will put the brake out of use on the vehicle, and the pipes may then be coupled up in the ordinary way to preserve the continuity of the brake.

When it is necessary to attach to a Midland passenger train a Great Northern, Manchester, Sheffield, and Lincolnshire, or Caledonian vehicle fitted with the brake apparatus, the brake on such vehicle must not be connected with the brake on the train, and the vehicles must be placed as near the end of the train as circumstances will permit. When the vehicles are fitted with connecting pipes only, and the couplings are suitable, the pipes must be coupled in the ordinary way to preserve the continuity of the brake.

These instructions will also apply to North-Eastern vehicles fitted with the London and North-Western description of brake, and in order to distinguish these vehicles from North-Eastern vehicles fitted with the Midland description of brake, labels, as shown below, will be placed on each of the four corners of the vehicles, immediately above the frames.

No. 1. L. & N.-W.	This brake will work with the L. & N.-W.
No. 2. MIDLAND.	This brake will work with the Midland.
No. 3. ALL.	Handle in centre notch applies L. & N.-W. Brake. Handle in other notches for pipe connexions only.

NORTH-EASTERN RAILWAY.

Instructions as to working the Westinghouse and Smith's Vacuum Continuous Brakes.

WESTINGHOUSE BRAKE.

Description.

Compressed air is the agent employed to apply the brake. On the engine there is a donkey pump for compressing air into a main reservoir. There are two brake cylinders for the driving wheels, except in the case of a few engines fitted with only one 10-inch cylinder, there is one for the tender, and one for each other vehicle. A single line of pipe extends the entire length of the train. On the engine, tender, and each vehicle is a triple valve having one connection with main pipe, a second connection to a reservoir on each carriage, and a third connection to the brake cylinder. The pipe from the main reservoir leads to a valve, and thence back under the tender. This valve is operated by the driver, who, by the movement of the handle in one direction, admits air to the main pipe from the main reservoir in order to charge the small reservoirs and release the brakes when they are applied, and by moving it in the opposite direction, discharges air from the brake pipe to the atmosphere, and so applies the brakes. If a train breaks in two, the couplings come apart so as to permit the escape of air, and the consequent application of the brakes. Similarly, if the pipe is fractured, the brakes are at once applied.

The operation is as follows:—The pump is started and air is compressed into the main reservoir. When the engine is coupled to the train, air passes into the pipe, triple valve, and reservoir on each carriage, charging all equally.

To apply the brakes, the pressure is lowered in the brake pipe by the driver operating his valve. This causes the triple valve to move so as to open a passage for the compressed air from each reservoir to its brake cylinder, the piston of which applies pressure to the levers and brake blocks.

The brakes are fully set when the pressure shown on the gauge is reduced 25 lbs.; any further reduction is a waste of air.

The brakes are released by admitting air from the main reservoir to the brake pipe, which re-charges the pipe and triple valves and reservoirs, whilst at the same time a passage is opened from each cylinder to the atmosphere. A cock is placed between each triple valve and the main pipe, so that the brake on any particular carriage can be put out of use. The brakes of the detached portion of a train, if applied, can be released by holding open a valve on each brake cylinder. These release-valves close automatically when not held open to release the brakes. There is a cock in each van to apply the brakes, and a gauge on the engine and in each van to indicate the pressure in the main pipe; there is also a gauge on the engine to indicate the pressure in the brake cylinder.

INSTRUCTIONS.

Drivers must see (1) that the top or steam cylinder of the air pump is kept well lubricated, (2) that the air cylinder is sparingly lubricated with the lubricator provided for the purpose, (3) that the pump is constantly run, but never faster than is necessary to maintain the required air-pressure, and (4) that air from 60 to 65 pounds pressure is carried.

NOTE.—The governor valve (that is, the valve which regulates the pressure in the pipes leading to the brake cylinders) will stop the action of the pump when the necessary pressure is obtained, but the pump should again act as soon as the air pressure in the pipes is reduced below the pressure necessary for the proper working of the brakes. To insure this the steam cock in communication with the governor valve should always be kept fully open.

The pressure in the pipes leading to the brake cylinders must be regulated by the governor valve to suit the speed of the train and the gradients it is to work over.

For ordinary stops the brake should be applied lightly, by turning the handle of the driver's valve to the right, and gently closing it again, after a reduction of pressure in the brake pipe, of not less than 5 lbs., nor more than 8 lbs., has been made. If the pressure runs up on the gauge when the handle is brought back, it shows that the valve has been shut too quickly.

In ordinary working the brakes are fully applied when the pressure shown on the gauge is reduced 25 lbs. Any further reduction is waste of air. In case of emergency, however, the handle must be turned so as to let all the air in the brake pipe escape.

Long trains require more careful handling than short trains, and a greater quantity of air must be discharged from the brake pipe to make the same reduction per square inch on the gauge. The driver, before starting, must ascertain the number of vehicles on the train, and the number working with brakes or pipes only.

In releasing the brakes, the handle should be kept in released position until the pointer of the indicator shows signs of rising, and then be moved back against the intermediate stop, which is the feed position, *where it must remain whilst the train is running.*

The driver must always satisfy himself that the brake coupling on his engine is properly connected to that on the train, and that the *cocks in the brake pipe, except the one at the rear of the last vehicle connected with the brake are open.*

The blocks of the driving-wheel brake should be so adjusted, by turning the screw, that the pistons travel from 3 to 4 inches.

The driver must be careful to drain the water out of the main reservoir once a week, and in frosty weather more frequently.

If vehicles having different air pressures be coupled together, the brakes will apply themselves on those which have the highest pressure. To ensure the certain release of all the brakes in the train, and in order that the train may be charged quickly, the driver must carry the maximum pressure in the main reservoir before connecting to the train. When coupled to the train he must put the handle of his brake valve in the release position until the train is charged with air, and this is shown to have taken place when the pointer of the indicator begins to rise. If the brakes on the engine and tender are found to apply themselves when the engine is coupled to a train not charged, they should at once be taken off by opening the release valves from the brake cylinders.

After connecting the engine to the train, or after new vehicles have been added, the pipes and reservoirs should be charged as quickly as possible. The brakes should then be applied with full force by the driver, who should not start away until the inspector or guard has signalled that the brakes are acting on all the vehicles.

The driver, before commencing a journey, must inform the guard whether the engine is fitted with the brake apparatus or not, in order that he may know how to act as to the use of the hand brakes.

Should the driver discover any defect in the working of the brake which will render it ineffective, he must at once give the guard notice, and arrange with him as to the use of the hand brake in the van, when necessary.

In running into stations with block ends, and at junctions where he has to stop, and also when moving up to attach his engine to a train, the driver must not rely upon the continuous brake, but must so regulate the speed of his engine that the ordinary application of the hand brakes on the engine and tender will be sufficient to bring the train or engine to rest. In ordinary stoppages at stations, the driver must use the brakes so as to stop the train without any jerk.

The brakes must not be used with more than half their force, except in cases of emergency.

When working the Westinghouse brake with two engines coupled together, the driver of the leading engine must take charge of the brake, and he must work it as he would on an ordinary train, not considering the second engine, except as a vehicle.

The driver of the second engine must keep his handle in the neutral position, and the donkey pump working; by this means he shuts off all communication from the main reservoir to the main pipe of the train.

The driver, on finding that the brakes have been applied by the guard, or automatically, must at once aid in stopping the train by turning the handle of the driver's valve towards the right, thus preventing escape of air from the main reservoir.

The driver must enter on his engine ticket all cases of irregularity in the working of the brakes.

Guards.—Before leaving the terminus, after adding to a train on the journey, or on another engine being attached, the rear guard must ascertain whether the couplings are connected, and the cocks in the brake pipe are all open throughout the train, by applying the brakes from his van and seeing that *they are released from the engine.* In making this test the pressure of air in the pipes, as shown by the indicator, should not be reduced more than is absolutely necessary. If the brake is not in use on the whole train, or if the van is not the last vehicle, the test should be made by opening the cock in the brake pipe of the last vehicle connected.

A guard, when he has occasion to apply the brake from his van, must open the tap and allow the air to escape until the train is brought to a standstill, but he should only use the brake in cases of emergency.

The guards must in all cases screw the *hand brakes clear off* before starting.

The guard must enter on his report all cases of irregularity in the working of the brakes.

Inspectors (Locomotive Department).—Inspectors must see (1) that the brake connections are perfect and properly adjusted for the wear of the blocks and wheels by being *uniformly* taken up. The pistons of double piston cylinders should each travel not less than two, nor more than four inches. Those of single piston cylinders should not travel less than four, nor more than eight inches; (2) that the brake cylinders are perfect and lubricated at least every three months with *mineral oil*; (3) that the hose couplings are united, and the cocks in the pipes, except the one at the rear of the last vehicle connected with the brake, are open, that is, the handles must stand across or away from the pipe except the one at the end of the train, which must lie along the pipe in the shut-off position; (4) that the joints are all air-tight.

General.—Before detaching the engine or any carriages, the brakes must be fully released on the whole train. Neglecting this precaution, or setting the brakes by opening a valve or tap when the engine is away, may cause serious inconvenience in shunting. The pipes and joints must be kept tight, and when leaks are discovered they should be corrected, if serious, before the vehicle is again used.

The brake pipe has a tap at each end of every vehicle, all of which must be open when the hose couplings are united, except the one at the rear of the train. These taps must always be opened after connecting the hose couplings, and always closed before separating them.

If the brakes are applied by the separation of the train, or the breaking of a pipe, they can be released by opening the small release valves in the brake cylinder, or pipes leading thereto. These taps, after the release of the brakes, must be closed.

If the brakes are applied after the engine has been disconnected, they can be released as above, or by again connecting to the engine.

The brake of any vehicle can be put out of operation without affecting the others, by closing the tap under that vehicle, between the brake pipe and triple valve.

No person must tamper with the tap in the brake van, as by so doing the brake is instantly applied, and cannot be taken off again except by opening the cock under each carriage, or by attaching the engine to the train.

H. TENNANT,
November 1884. *General Manager.*

SMITH'S VACUUM BRAKE.

Description.

Atmospheric pressure is employed to work the brake. An annular steam ejector is fixed on the engine, and attached to it is a main pipe running the full length of the train. A sack or compressible cylinder is fixed on the engine, two are fixed on the tender, and two on each vehicle. One end of the cylinder is secured to the framing, and the other to a system of bars, connected with the brake blocks. Branch pipes connect the cylinders with the main pipe. When steam passes through the ejector, a partial vacuum is formed in the cylinders, and they tend to collapse; they are so constructed that they can only be compressed vertically, and on being compressed they apply the brakes.

There is a driver's valve to work the ejector, a flap valve to release the brakes, and a vacuum gauge indicating the extent of the partial vacuum formed in the cylinders.

The operation is as follows:—Steam is allowed to escape through the ejector by the driver opening the valve, which exhausts the air in the main pipe and cylinders. The cylinders collapse under the pressure of the atmosphere and apply the brakes.

The brakes are released by stopping the steam passing through the ejector and opening the flap

valve and admitting air into the main pipe and cylinders.

Instructions.

Trains on which this brake is fitted will be controlled and worked by the driver only, unless the guards are specially called upon by the usual whistle signal, to apply their hand brakes.

In using this brake, the force to be applied must not exceed 15 inches on the gauge, and drivers must shut off steam and apply the brake, so that the stoppage can be properly effected by this power.

The excess of power beyond 15 inches of vacuum must not be used except in cases of emergency.

Before starting with a train, the driver must test the connecting pipes to ascertain if they are properly coupled up, by working the ejector. If all is tight, the gauge will show it by the pointer remaining where carried by the vacuum.

The use of this brake is intended to give greater certainty in making stoppages, and the driver must be careful not to run into a station at such a speed as to render it necessary to skid the wheels in order to bring the train to a stand.

In running into stations with block ends, and at junctions where he has to stop, and also when moving up to attach his engine to a train, the driver must not rely upon the continuous brake but must so regulate the speed of his engine that the ordinary application of the hand brakes on the engine and tender will be sufficient to bring the train or engine to rest. In ordinary stoppages at stations the driver must use the brakes so as to stop the train without any jerk.

Should an engine fitted with this brake have any defect in the ejector or pipes, the driver must, before starting with the train, give the guard notice that the hand brake will require to be used, so as to avoid the necessity for calling on him to apply his brake on approaching each station.

The driver, before starting, must inform the guard whether the engine is fitted with the brake apparatus or not, in order that he may know how to act as to the use of the hand brakes.

The driver must enter on his engine ticket, and the guard on his report, all cases of irregularity in the working of the brakes.

H. TENNANT,
November 1884. *General Manager.*

NORTH STAFFORDSHIRE RAILWAY.

VACUUM BRAKE.

Instructions to Enginemen and Guards.

Description.—Each carriage and van is fitted with a vacuum brake, which can be applied by the driver only.

Small Vacuum.—As soon as a driver hooks on to the train, he must bring the vacuum gauge to "right," by a puff of the big ejector, and set the small ejector so as to constantly maintain the gauge in that position, whether running or standing.

Vacuum Brake.—The vacuum brake is applied by pulling the handle on the brake valve until the catch comes against the first stop.

To apply the steam brake on engine and tender as well as the vacuum brake on the train the handle must be pulled right over.

Steam Brake.—To apply the steam brake only, the handle on the brake-valve must be pushed to the end of slot, instead of pulled.

Enginemen are instructed that in all cases of ordinary stoppages they must shut off steam, and reduce the speed of their train at the usual place where they would do so with a train fitted with the ordinary hand brakes, and it must be clearly understood that they must not use the vacuum brake to its "full extent," unless it is necessary to stop very quickly.

No excuse of the failure of the vacuum brake will be taken in cases of overshooting platforms.

Guards' Brakes.—Each van is fitted with a hand brake, to be applied by the guards in case the vacuum brake fails; should the vacuum not be maintained the bells in the guards' vans will ring and the indicators show wrong.

The vacuum brakes throughout the train being under control of the driver, the use of the "*hand brake*" in the vans is not required in making an ordinary stop. But guards must be prepared to apply the "*hand brake*" immediately on its being called for by the driver's whistle.

The driver will before starting from a terminal station, and also before leaving any station where a vehicle has been attached or detached to the train, test the vacuum brake, and the guard in charge of the rear van must see that the indicator in his van shows "right," and signal the driver that it is so, by *showing him a white flag by day and a white light by night*, which must be repeated by the driver giving a *hand signal* to the guard by day, and showing him a *white light by night*.

June 1884.

By Order.

INSTRUCTIONS FOR WORKING THE AUTOMATIC VACUUM BRAKE.

Description.

The Automatic Vacuum Brake is continuous throughout the train, each vehicle carrying its own brake power. Should a train fitted with this brake become divided when running, the disconnexions of the hose-pipe will cause the brake to go on throughout each portion of the train.

The brake power available depends upon the amount of vacuum maintained by the driver, and not less than 18 inches vacuum must be maintained in the rear van of the train whilst in motion.

The brake is applied by the driver admitting air to the main train pipe, and this can also be accomplished in case of emergency by the guard pressing down the lever of the valve fixed on the iron pipe in the van.

When a sudden application of the brake is made by the driver the valve in each guard's van will open automatically, thereby admitting air to the main train pipe, thus ensuring a rapid application of the brake.

There is a gauge in each guard's van showing the amount of vacuum in the train pipe and in the reservoir underneath each carriage.

The brake is released by the driver re-creating the vacuum throughout the train, and when the engine is detached the brake can be released by pulling the wire which will be found underneath the carriage frame, and which must be held back until the brake is fully off. Care must be taken to see that the hose-pipe is taken off the plug at one end of the train.

Whenever the pipes between the vehicles are disconnected the couplings must be placed on the plug at each end of the vehicles.

Action of the Brake.

The engine having been hooked on to the train, and the hose couplings between the tender and the train, also, those between the coaches connected, and the one at the end of the train placed upon the plug, the driver will admit steam to the *large ejector* to exhaust the train pipe and cylinders to a vacuum of 22 inches, which must be maintained throughout the journey and whilst standing at stations, the small ejector only being used in case of the air pump failing to act.

To apply the brake the driver admits air to the train pipe by opening the brake-valve.

To release the brake the driver will close his brake-valve and admit steam to the large ejector.

When the brake is applied, the pressure of the brakes on the wheels may be increased or diminished

at pleasure without removing them, and also without reducing the full reserve power which is always at command for an emergency stop.

Station stops should not be made by violent application of the brake, but by a destruction of vacuum of from 5 to 10 inches, which should be re-created slowly as the train comes to a stand, in order to prevent jerking at the end of the stop.

To apply the brake quickly the driver must open the brake-valve to the full extent.

The guard can apply the brake by pressing down the handle of the valve placed in the van, but this must only be done in extreme cases of emergency.

The guard must see whilst running or standing at stations that a vacuum of at least 18 inches is maintained in the van, or report otherwise to the driver.

It will be the duty of the guard to see that the couplings between the carriages are properly connected, and that the coupling of the last coach is placed on the plug.

To release the brake for shunting purposes (the engine having left the train) first see that the hose coupling at one end of the train is off the plug, then pull the wire underneath the frame of each carriage, which must be held back until the brake is fully off.

W. D. PHILLIPPS,

Traffic Manager.

Stoke Station,
January 1890.

SOMERSET AND DORSET JOINT RAILWAY.

THE VACUUM AUTOMATIC BRAKE, COMBINED WITH STEAM BRAKE ON ENGINE.

This brake can be applied throughout the train by the driver from his engine or by the guard from his van.

Drivers' Instructions.—Before starting, see that your gauge indicates 21 inches of vacuum. This is done by admitting steam to the small ejector by means of a steam cock placed for that purpose. The small ejector must always be kept working, whether attached to a train or not. To apply the brake, move the lever on the combination ejector to "brake on." In ordinary running this lever must stand at "running position." To release the brake, move the lever to position "brake off," and restore the vacuum to the same amount as before the application. When the vacuum is suddenly destroyed in the main pipe the brake is full "on." When separated from your train, see that the couplings are placed upon the dummies fixed for that purpose, and when attached to a train, that the pipes between engine and carriage are properly coupled up.

Guards' Instructions.—To apply the brake, press down the lever on the valve placed in the guard's van. This admits air throughout the train pipe, and is only to be employed in cases of emergency. This valve opens automatically when the brake is applied with full force by the driver, and ensures rapid action. See that all pipes between carriages are properly coupled together, and that the couplings on the end coaches are placed upon the dummies. See by your gauge that a vacuum of 21 inches is maintained. Report otherwise to driver.

General Instructions.—To release the brakes for shunting purposes (the engine having left the train), first see that the hose coupling at one end of the train is off the dummy, then pull the cord which is fixed under the body of each carriage, as indicated by the arrows. This admits air to the top side of the cylinder, and the brakes come off by gravity.

S. W. JOHNSON,
Loco. Superintendent.

R. A. DYKES,
Traffic Superintendent.

August 12th, 1885.

NOTICE to ENGINEMEN and FIREMEN.

Testing of Brake Apparatus on Engine and Tender.

It is the duty of enginemen in every instance, before taking their engine out of the shed, to test the brakes on both the engine and tender, as directed below, so as to satisfy themselves that they are in efficient working order.

AUTOMATIC VACUUM BRAKE.

Before leaving the shed or starting on a journey, the driver must test the action of both the large and small ejector, each in its turn separately, and satisfy himself that the joints of the pipes on the engine are tight, and the ejectors in working order. Should the fall of vacuum be very rapid, the joints must at once be examined to discover the leakage, and in order to draw out any water that may have accumulated in the engine or tender brake pipes, the engineman, both before leaving the shed, and on his return at the end of his day's work, must take off the hosepipe coupling from the dummy and use the large ejector freely, which can be done by putting the handle over to "On." All drain valves and pipes in connection with the brake apparatus must be kept free and in working order.

Enginemen must always test the continuous brakes, and ascertain for themselves if they are in good working order when the engines are coupled up to the train, and immediately before starting on a journey.

S. W. JOHNSON,
Loco. Superintendent.

Derby,
12th August, 1885.

SOUTH-EASTERN RAILWAY.

VACUUM CONTINUOUS BRAKE AS PER REGULATIONS OF ACT OF PARLIAMENT, 1878.

Certain trains, as may be arranged, are now fitted with continuous air brakes, applied from the engine. The working of these by the enginemen will not relieve the guards from any responsibility. They must keep a good look-out, and apply the hand brakes should any necessity arise, as if the trains were not fitted with the continuous brake.

Brake-vans and carriages which are fitted with the continuous brake apparatus must be kept for use in the continuous brake trains, or as through carriages in branch trains in connection with the continuous brake trains, and any spare brake-vans and carriages which are fitted with the continuous brake apparatus must be worked up to Rotherhithe Road Carriage Depot.

When vehicles fitted with a continuous air brake are left in sidings or at stations, the brake pipes of each vehicle must be coupled together, and not left hanging loose. Porters and others are cautioned that in passing between vehicles *they must not step upon the brake pipes*, nor in any way interfere with the connections.

General Instructions applying to trains worked by either Continuous Brake.

The hand brakes are always to be applied by the guards whenever the train is stopped by signal, or at any intermediate station, other than where appointed to call.

Station-masters, inspectors, and foremen must give special attention to the proper coupling of the continuous brake pipes, and make such arrangements as will prevent these pipes being in any way improperly used.

The guards must see that the pipes of the continuous brakes on their trains are properly coupled together before starting, and whenever any engine or vehicle is attached or detached; and they must, frequently during the journey, examine the pipes and ascertain they are in good order, and remain properly coupled together.

Guards are required to enter on their journals whether their trains were worked with the continuous brake, stating whether vacuum or automatic, also give full particulars of any defect, failure, or unsatisfactory working of the brake of their trains, or any portion of the fittings, couplings, &c.

Drivers must not depend on the brake until they have tested and found it to work properly. For this purpose they will test the brake before starting, and also wherever the engine is changed. Engine drivers must, before passing the distant signals for stations where the train has to be stopped, or at stations and junctions where the speed has to be reduced, try the brake to see that it is in good working order. Occasionally during the journey, and when descending sharp inclines, the continuous brake must be tried by the engine-driver to ensure it being in perfect working order.

CALEDONIAN RAILWAY.

Description and Instructions as to the working of Continuous Automatic High-pressure Air Brakes for Passenger Trains.

THE WESTINGHOUSE SYSTEM.

Description.

The air used to apply the brake is compressed by a small engine and pump placed on the locomotive. The driver or any of the guards can apply the brake, *and it applies itself in the case of a break-away, or the failure of any of its vital parts.*

The engine, tender, and each vehicle of the train is fitted with the following parts:—(1) a triple valve, (2) a supplementary air reservoir, and (3) a cylinder with piston-rods; the latter in connexion with (4) the brake lever and blocks. Upon the engine a main reservoir also is fitted.

When a train is made up and ready to start, and also when it is running, compressed air stands at equal pressure in the pipe from end to end of the train, and in the triple valve and supplementary reservoir on each vehicle, but in the main reservoir the pressure is about 10 lbs. in excess of that in the train.

The brake is *applied* by a *decrease* of pressure in the main pipe. This causes the triple valve to move down, and to allow the air stored in the supplementary reservoirs to pass instantly into the cylinders, force out the pistons and rods, and cause the blocks to press against the tyres of the wheels.

The brake is *released* by an *increase* of pressure in the main pipe, by allowing air to pass from the main reservoir along the train. This moves the triple valves up, re-charges the supplementary reservoirs, and at the same time allows the air which had forced out the pistons to escape into the atmosphere.

Instructions.

Drivers must see (1) that the top or steam cylinder is kept well lubricated; (2) that the air cylinder is sparingly lubricated with a small quantity of paraffin—*tallow or oil must not be used in the air cylinder*; (3) that the pump shall be *constantly run*, but never faster than is necessary to maintain the required air pressure; and (4) *that air of 75 lbs. pressure is carried.*

For ordinary stops the brakes should be applied *lightly* by turning the handle of the driver's valve to the right, and gently closing it again, after a reduction of pressure in the brake pipe of not less than 5 lbs. nor more than 8 lbs. has been made. If the pressure runs up on the gauge when the handle is brought back, it shows that the valve has been shut too quickly. Just before coming to a stand the brakes should be released, so as to avoid any jerk.

Drivers must exercise care and moderation in applying the brakes for ordinary stops, so as to bring their trains to rest without inconvenience to the passengers,

and the brakes must not be used with more than half their full force, except in cases of emergency.

The brakes are fully applied when the pressure shown on the gauge is reduced 25 lbs. Any further reduction would be waste of air. *In case of emergency, however, the handle must be turned so as to let all the air in the brake pipe escape.*

Long trains require more careful handling than short trains, and a greater quantity of air must be discharged from the brake pipe to make the same reduction per square inch on the gauge.

In releasing the brakes the handle must be moved quite against the stop, and kept there for about *ten seconds*, and then moved back against the intermediate stop, which is the feed position, and *where it must remain whilst the train is running.*

Drivers, upon feeling that the brakes have been applied by the guard, or automatically, must at once aid in stopping the train by turning the handle of the brake valve towards the right, thus preventing escape of air from the main reservoir.

Drivers and firemen are *at all times* responsible for having all the couplings between the engine and the first vehicle of the train properly connected, and that the cocks in the brake pipe are open; and before starting, and at intermediate stations where the composition of the train has been altered, must ascertain from the guard the number and position of brake-fitted vehicles connected with the engine, and be guided on the journey in the application of the brake accordingly. Also, before starting, the air must be raised to the full pressure at which it is to be worked during the journey, and the brakes applied with full pressure and taken off, in order to properly test the several pipes and connexions. This operation to be repeated after the guard tests the brake from the van, to ensure all the brakes coming properly off.

The blocks of the driving wheel brake should be so adjusted by turning the screw, that the pistons move up from 3 to 4 inches.

Drivers must be careful to drain the water out of the main reservoir once a week, especially in winter time.

If vehicles, having different air pressures, be coupled together, the brakes will apply themselves on those which have the highest pressure. Drivers should, therefore, keep the handle of their brake valve in the neutral position until their train is all coupled up. To ensure the certain release of all the brakes in the train, and also that trains may be charged quickly, the driver must carry the maximum pressure in the main reservoir before connecting to a train, and then put the handle of his brake valve in the release position until the train is charged with air. If the brakes on the engine and tender thus apply themselves by being coupled to a train not charged, they should at once be taken off by opening the release valves from the brake cylinders, which ought to be *so arranged as to be worked from the footplate.*

Ordinary stoppages must not be made too quickly, *particularly* when the train is not fitted with the continuous brake throughout. In such cases the guard will apply the rear hand brake for ordinary stoppages, and also on being warned by the driver by whistle, and when drivers have given the signal "brakes on" in cases where the train is not to be brought to a stand, care must be taken to give the whistle "brakes off" before altogether releasing the continuous brake or putting on steam.

When approaching *terminal stations*, particularly on *falling gradients*, *great care* must be exercised to have the train so under control with the air brake, that, if required, it could be stopped by the *tender hand brake only* before the engine reaches the station buffers. This must also be very carefully observed in the case of trains that arrive in *docks*, and behind other trains in through stations.

Pilot engines assisting in front must be coupled to the train engine as closely as practicable, and the driver of the leading engine must not put on steam until the steam of the train engine is on, whether this

may be in starting or for the purpose of increasing the speed after the steam has been shut off, neither must the tender brake of the leading engine be applied until the train brake is on, and when it is applied, it must not be released until the train brakes are entirely off.

In all cases of two engines being coupled together and fitted with the Westinghouse brake, the brake couplings must be connected, and the driver of the leading engine take full control of the brake power of the train; and the driver's valve of the *train engine* must be placed and *remain in the neutral* position, so as to cut off the communication from the main reservoir of that engine to the train pipe.

The indicator on the train engine will then only show the pressure the leading engine is maintaining in the train pipe. It is essential that the *pressure* in the main reservoir of the *train engine* be *kept above* that in the *train pipe*, otherwise the brakes will apply themselves by air escaping from the train pipe past the driver's valve to this main reservoir.

The air pump of the train engine must, therefore, be kept slowly and steadily working, independent of the pressure shown on the indicator.

The driver of the train engine to take no action in the ordinary stoppages, but must be, at all times, prepared to apply the brake in cases of emergency.

Guards.—Before starting, and at intermediate stations, where the composition of the train is altered, must, in order to guide them on the journey in the application of the brake, make themselves thoroughly aware, personally, of the number of brake-fitted and non-fitted vehicles in the train, and how many of the fitted vehicles are connected with the engine, and must go forward to the driver and give him this information. When there is more than one guard with the train, this will be the duty of the head guard.

The guard in charge, before starting from a terminal station, or after making up a train, or after attaching any vehicle to a train, or detaching any vehicle from a train, or after a fresh engine is attached, shall ascertain whether the brake is connected throughout the train by allowing a little air to escape from the tap in the rear van, reducing the pressure 5 or 10 lbs., after which the pressure indicator in the van *should again rise* to prove that the air pipes are open throughout from the engine. Should the pressure *not* rise again in the indicator, the guard must give the driver a red signal, and both driver and guard must at once ascertain the cause and have it put right. When the pressure does rise, the guard must give a white signal, and the driver must then apply the brake with full force, and, after allowing it to remain on eight or ten seconds, must quickly release it, to ensure it coming properly off all of the vehicles.

The signal by the guard to be given with a flag by day and with a hand lamp by night.

If the brake is not in use on the whole train, or if the van is not the last vehicle, the test should be made by opening the cock in the brake pipe on the rear end of the last vehicle connected.

When a train has any vehicles not fitted with the continuous brake, or fitted with the pipe connexion only, guards must apply their hand brakes at all ordinary stoppages, and must be prepared to apply them as efficiently as possible on being warned by the driver by whistle, and they must not be taken off until the driver gives the whistle "brakes off," or until all the vehicles of the train have *completely* come to a state of rest—including the rebound, if any, of the carriage buffers—and when the hand brake is being released it must not be allowed to fly off, but must be taken off slowly.

In all cases of trains, whether fitted or not fitted with continuous brakes, arriving at terminal stations and in docks, and behind other trains in through stations, guards must apply their hand brakes as far as is necessary to assist in stopping at the proper place.

Guards, when they have occasion to apply the continuous brake from their van, must open the tap and

allow the air to escape until the train is brought to a stand, but they should only use the continuous brake in cases of emergency.

Guards must in all cases take the *hand brakes clear off* before starting.

General.—It is the duty of the staff at stations where trains are made up, and where vehicles are attached or detached, to adjust the couplings and air pipes properly, and to be most particular in screwing all of the vehicles *tightly* together, and it is the duty of the fireman to attach the engine to the train before starting, and to detach it at the end of the journey. When the engine requires to be detached at any station for shunting purposes, it is the duty of the station staff to do so, and to do *all* attaching and detaching of the engine, except in cases of the staff being limited or otherwise engaged, when the fireman must perform the duty at the request of the person in charge. It is the duty of the fireman when the engine is brought back to the train preparatory to starting to attach it properly to the train.

In cases where there are vehicles not having the necessary fittings to be put on to a train, those with the continuous brake must be placed continuously next to the engine, so that the largest possible measure of brake power may be available.

Horse boxes, carriage trucks, and other passenger vehicles have been fitted with pipes for conveying air to the other vehicles of any train of which they may form a part, and a number of the older class of brake vans and carriages have also been fitted with pipes which have no connexion with the brakes on the vehicles themselves. All such vehicles will be distinguished by having a *knob* on the handles of the cocks, which are on the main pipe at the ends of the vehicles, and must be carefully noted by the guard before starting trains from terminal stations, or intermediate stations where vehicles are attached or detached, who must inform the driver.

The brakes of any vehicles can be put out of operation without affecting the others by closing the taps under those vehicles between the brake pipe and triple valve.

To prevent the valve in the guards' brake vans being tampered with, neither Company's servants (unless duly authorised) nor passengers must be allowed to travel in the brake vans, and those unoccupied must be locked up.

The main pipe is fitted with a stop-cock at the end of each vehicle, the cocks are *open* when the handles are standing across or away from the pipe, and shut when the handles are up or alongside the pipe. *Upon no account must any train be started from a station without all of these cocks being open, except the cock on rear end of the last connected brake vehicle*, and when the train has to be separated for attaching or detaching, or taking off the engine, the stop-cocks where the separation is to take place *must be shut before* the flexible pipes are disconnected, and when the train is made up again the flexible pipes must be connected *before* the cocks are opened.

If the brakes are applied by the separation of the train, or the breaking of a pipe, they can be released by opening the small release valves in the brake cylinder or pipes leading thereto, which is done by pulling a wire attached to both sides of the frame of the carriage. If the brakes are applied after the engine has been disconnected, they can be released as above or by again connecting to the engine.

When at any time a train charged with air has to be worked by a locomotive not fitted with the continuous brake, or part of the train is cut off from the locomotive by intervening vehicles not fitted with brake pipes, the staff at stations, and guards at places where there is no station staff, must allow the air in the vehicles cut off to escape by first allowing all the air in the main pipe to escape, and afterwards opening the release valve on each vehicle.

Before detaching the engine or any vehicles, the brakes must be fully released on the whole train.

Neglecting this precaution, or setting the brakes by opening a valve or tap when the engine is away, may cause serious inconvenience in shunting. Under these circumstances, guards must give special attention to their hand brakes.

At stations where the composition of trains is altered, the staff must be careful to see that all the brakes are clear off, and no train must be allowed to leave with the air brakes on any part however slight. Drivers must stop if they feel the train is being retarded, and have the brakes properly released.

The pipes and joints must be tested with screw-key, where necessary, and kept air-tight, and, when leaks are discovered, they must be corrected, if serious, before the vehicle is again used.

The hose coupling, when not used for connecting the brake between two vehicles, must be attached to the hook provided.

Any defect occurring in the working of continuous brakes must be pointed out by the guards or drivers immediately on arrival at—

Carlisle,	Stirling,
Beattock,	Oban,
Carstairs,	Perth,
Edinburgh,	Dundee West,
Glasgow (Central),	Do. East,
Do. (Bridge Street),	Forfar,
Do. (Buchanan St.),	Montrose,
Greenock,	Aberdeen,
Hamilton,	Gourock (week days),

to the carriage examiners at these stations.

In the event of a flexible pipe bursting on the journey, the guard will telegraph forward to the first carriage examining station to have a new pipe in readiness to replace the defective one, any irregularities or special circumstances in the working of the brake, or defects in its action, must also be specially reported by the guard in charge, to his district superintendent, as well as on his guard's journal, giving every particular mentioned in the printed forms supplied for that purpose.

Carriage examiners should see (1) that the brake connexions are perfect and properly adjusted for the wear of the blocks and wheels by being uniformly taken up. The pistons of double piston cylinders should each travel not less than two, nor more than four inches. Those of single piston cylinders should travel not less than four nor more than eight inches. (2) that the brake cylinders are perfect and lubricated at least every three months with *paraffin oil*, and (3) that the couplings and other parts are tight, and must always have on hand, at a convenient place, one or more flexible pipes, with couplings fixed, ready to screw at once on to any vehicle that may require one.

THE STEEL-M'INNES SYSTEM.

Description.

Each locomotive is fitted with a small engine and pump for the purpose of compressing air into the main reservoir, which is carried below the foot-plate or other convenient place. The driver or any of the guards can apply the brake, and it applies itself in the case of a break-away, or the failure of any of its vital parts.

The compressed air is led from the main reservoir through a reducing valve adjusted to give the desired pressure it has been decided to work the brake, then to a check-valve and three-way-cock, all of which are placed convenient to the driver's hand on the foot-plate. The three-way-cock has a passage from the main reservoir to the main pipe on the train, and another from the main pipe to the atmosphere.

Each air-braked vehicle is fitted with a pipe with couplings at each end for connecting so as to form a continuous main pipe from the locomotive to rear braked vehicle; a cylinder with piston-rod connected to the brake levers; a small air reservoir; a small check-valve to prevent air that has passed from the main pipe to the lower end of cylinder and small

reservoir *from returning* to the main pipe; and a small relief tap for the purpose of allowing the air to escape and take off the brake when *necessary*.

A gauge, placed on the locomotive and connected to the large reservoir, indicates the pressure of air on hand for charging the reservoirs and cylinders on the train.

When the handle of the three-way-cock is in a line with the locomotive, and the *lever of check-valve pressed down*, the passage from the large reservoir to main pipe is open, giving free access to both ends of cylinders and small reservoirs, all of which are charged equally with air up to the pressure at which the reducing valve is set, and on account of the greater area of the upper side of the pistons over that of the lower side, due to the large diameter of piston rods, the pistons are kept at the lower ends of cylinders, and *brakes are off*.

When the handle of the three-way-cock is at right angles to the locomotive or across the foot-plate the passage is closed from the large reservoir to the main pipe, and opened from the main pipe to the atmosphere, thus allowing the air in the *main pipe and upper ends of cylinder to escape*, and the air that is confined in the small reservoirs and lower ends of cylinders to expand and force up the pistons and rods and *put brakes on*.

Instructions.

Drivers.—The top or steam cylinder to be kept well lubricated *with tallow*, and the lower, or air cylinder, with *a little pure mineral oil*.

The pressure of air in main reservoir to be kept always in *excess* of the regulated pressure of reducing valve, and as much so as possible when about to connect to a train, and when additional carriages require to be attached.

Water to be run off main reservoir once a week, by the plug provided for the purpose.

In order to prevent waste of air from the main reservoir when brakes are put on by the guard, or by a failure of any of the pipes on the train, the check-valve on the locomotive must not be opened except when cylinders and reservoirs of carriages are being charged with air, or when taking off brakes.

The small hole for the passage of air through the check-valve being sufficient to maintain the pressure in main pipe when the train is running with brakes off.

For ordinary stoppages and slowing at junctions, &c., the three-way-cock must be so opened and closed again that *no more* air is allowed to escape from the main pipe *than is necessary* to apply the brakes *lightly*.

When it is necessary to stop the train *quickly*, the three-way-cock must be opened at once to the fullest extent, and allowed to remain in that position until the train has come to a stand.

Drivers, before starting their trains, and during the journey, must make themselves thoroughly aware, personally, how many vehicles on their trains are fitted, or not fitted, with the continuous brake, and as to how many of the fitted carriages are connected with the engine, and they must be guided on the journey in the application of the brake accordingly.

Ordinary stoppages must not be made too quickly, particularly when there are vehicles in rear of the train not fitted or connected with the continuous brake, and in such cases it is the duty of the guard to apply the rear hand brake for ordinary stoppages, and also, on being warned by the driver by whistle, and when drivers have given the signal "brakes on" in cases where the train is not to be brought to a stand, care must be taken to give the whistle "brakes off" before altogether releasing the continuous brake or putting on steam.

Pilot engines assisting in front must be coupled to the train engine as closely as practicable, and the driver of the leading engine must not put on steam until the steam of the train engine is on, whether this may be in starting or for the purpose of increasing the speed after the steam has been shut off, neither must the

tender brake of the leading engine be applied until the continuous brake is on, and when it is applied, it must not be released until the continuous brake is entirely off.

When approaching *terminal stations*, particularly on *falling* gradients, *great care* must be exercised to have the train so under control with the air brake that, if required, it could be stopped by the *tender hand brake only* before the engine reaches the *station buffers*. This must also be very carefully observed in the case of trains that arrive in *docks*, and behind other trains in through stations.

Guards.—Before starting with their trains, and during the journey, must make themselves thoroughly aware, personally, how many vehicles on their trains are fitted or not fitted with the continuous brake, and as to how many of the fitted carriages are connected with the engine, and they must be guided on the journey in the application of their hand brakes accordingly.

The guard in charge, before starting from a terminal station, or after making up or adding to a train, or after a fresh engine is attached, shall ascertain whether the brake is connected throughout the train by allowing a little air to escape from the valve in the rear van, reducing the pressure 5 or 10 lbs., after which the pressure indicator in the van should again rise to prove that the air pipes are open throughout from the engine. If the brake is not in use on the whole train, or if the van is not the last vehicle, the test should be made by loosening the flexible pipe and opening the cock in the brake pipe at the rear end of the last vehicle connected.

When a train has continuous braked carriages in front and carriages not fitted with continuous brakes in rear, guards must apply the hand brakes of such non-fitted vehicles, particularly the *rear hand brake*, at all ordinary stoppages, and must be prepared to apply them as efficiently as possible on being warned by the driver by whistle, and they must not be taken off until the driver gives the whistle "brakes off," or until all the vehicles of the train have *completely* come to a state of rest—including the rebound, if any, of the carriage buffers—and when the hand brake is being released it must not be allowed to fly off by suddenly withdrawing the catch, but must be taken off slowly.

In all cases of trains, whether fitted or not fitted with continuous brakes, arriving at terminal stations, and in docks, and behind other trains in through stations, guards must apply their hand brakes as far as is necessary to assist in stopping at the proper place.

When the continuous brake requires to be applied from the van, which must only be done in cases of emergency, the tap in the brake vans must at once be turned wide open, and allowed to remain in that position until the train comes to a stand. In all cases of emergency this must be done in addition to the driver applying the brakes.

Hand brakes must, in all cases, be taken clear off before starting.

General.—It is the duty of the staff at stations where trains are made up, and where vehicles are attached or detached, to adjust the couplings and air pipes properly, and to be most particular in screwing all of the vehicles *tightly* together, and it is the duty of the fireman to attach the engine to the train before starting, and to detach it at the end of the journey. When the engine requires to be detached at any station for shunting purposes it is the duty of the station staff to do so, and to do *all* attaching and detaching of the engine, except in cases of the staff being limited or otherwise engaged, when the fireman must perform this duty at the request of the person in charge. It is the duty of the fireman, when the engine is brought back to the train preparatory to starting, to attach it properly to the train.

When the main pipe is fitted with a stop-cock at the ends of each vehicle the cocks are *open* when the handles are standing across or away from the pipe, and *shut* when the handles are up or alongside the

pipe. *Upon no account* must any train be started from a station without *all* of these cocks being *open*, and when the train has to be separated for attaching or detaching, or taking off the engine, the stop-cocks where the separation is to take place *must be shut before* the flexible pipes are disconnected, and when the train is made up again the flexible pipes must be connected *before* the cocks are opened.

The free ends of the flexible pipe on the rear end of the last vehicle to be turned up and firmly fixed into its place by the screw provided, and the free ends of all pipes when not in use to be in the same way fixed in the places provided.

In *any case* of the brakes being applied and cannot be taken off by air from the locomotive in the ordinary way they can be taken off at once by *opening the relief tap* on each vehicle. And when at any time a train charged with air has to be run by a locomotive not fitted with continuous brake, or is cut off from the locomotive by intervening vehicles not fitted with brake pipes, the staff at stations, and guards at places where there is no station staff, must allow the air in the train to escape by *opening the relief tap* on each vehicle.

In cases where there may not be sufficient vehicles with the necessary fittings to compose the whole train it is desirable that those with the continuous brake be placed continuously next to the engine, so that the largest possible measure of brake power may be available.

To prevent the valve in the guard's brakes being tampered with, neither company's servants (unless duly authorised) nor passengers must be allowed to travel in the brakes, and those unoccupied must be locked up.

In the event of any irregularity, of whatever nature, occurring in the working of the brake, it must be reported at once, giving every particular mentioned in the printed forms supplied for that purpose.

Carriage Examiners.—To lubricate the cylinders on the carriages with a small quantity of mineral oil, about once a month to see that the brake connexions are in order, and *properly* adjusted for the *wear* of the blocks, and that the piston rods are kept clean.

AUTOMATIC VACUUM BRAKE.

Trains worked into Carlisle by the London and North-Western automatic vacuum brake must have the vacuum destroyed on each vehicle in the following manner, before the train is taken forward by a Caledonian Railway engine:—

- 1st.—Remove the pipe of vacuum brake from the stopper on the end of rear vehicle.
- 2nd.—Pull the vacuum ball valve wire on the rear brake van or carriage until the vacuum piston of that vehicle drops to the bottom of the cylinder.
- 3rd.—Turn the lever of the five-way-cock on the carriages from "Auto." to "Simple," and see that the brake blocks come off.
- 4th.—The vacuum on all vehicles which are fitted with a hand brake must be destroyed by the ball valve wire only, and not by the lever of the five-way-cock.
- 5th.—Examine the train pipe and reservoir indicators in each guard's van or brake compartment on the train, and see that they are standing at zero; then replace the vacuum pipes on the stoppers at front and rear end of train. (25916.)

VACUUM AND WESTINGHOUSE BRAKE VEHICLES FOR LONDON AND NORTH-WESTERN LINE.

The London and North-Western Company having adopted the vacuum brake, care must be taken that the carriages, horse-boxes, carriage trucks, and meat vans of this company working on to the London and North-Western line are fitted with the combined vacuum and Westinghouse brakes or pipes; and, as only a limited number of such vehicles have been thus fitted, it is necessary that the earliest possible notice

of what is required should be given to the General Superintendent, Glasgow.

The end vacuum pipes of Caledonian vehicles which are fitted with vacuum pipes, but which have no brake apparatus operating on their wheels, are painted a distinctive colour (red). (X 3400.)

VACUUM AND WESTINGHOUSE BRAKE POWER ON THROUGH TRAINS BETWEEN SCOTLAND AND ENGLAND.

The West Coast Joint Stock carriages and vans are now fitted with the combined Westinghouse and vacuum brakes, the former for working over this company's line, and the latter for London and North-Western line.

In making up the through trains, in order to give the largest possible amount of brake power to both companies, the vehicles to be marshalled from the engine are as under:—

- 1st. Vehicles fitted with compound brake.
- 2nd. Vehicles fitted with Westinghouse brake only.
- 3rd. Vehicles fitted with vacuum brake only.
- 4th. Vehicles fitted with any other brake.

The brake vans of through trains which are handed over to the Caledonian Company at Carlisle, and which have been worked by the London and North-Western vacuum brake to that point, are provided with an automatic valve which applies the vacuum brake to the van wheels so soon as the London and North-Western engine is detached.

It will be the duty of the through guards at Carlisle, immediately the London and North-Western engine is detached from the train, to destroy the *stored up* power reserved in each brake van for the automatic action of the vacuum brake, so that it may not apply accidentally or otherwise when the train is running on the Caledonian line. This is done by moving the spindle of the valve in the guard's van up and down several times until the vacuum gauge indicates zero. The valve must then be left up and the catch hooked in.

When the trains are worked by Caledonian guards from Carlisle only, they must see before starting that the London and North-Western guards have destroyed the vacuum in each van, and that the valve catch has been hooked in, and remains so on the journey.

The London and North-Western Company's fireman will leave the vacuum pipe off the stopper when he uncouples his engine from the train, and this will enable the stored up power reserved in each brake van to be properly destroyed. The Caledonian fireman must put the vacuum pipe on the stopper when he couples his engine on to the train.

When there are any vehicles to detach at Carlisle from the front of the train, the Citadel station shunter must leave the vacuum pipe off the stopper of the front vehicle for the Caledonian line, in the same way as the London and North-Western Company's fireman is required to do in the other case.

WESTINGHOUSE BRAKE STOP-COCK HANDLES ON GLASGOW AND SOUTH-WESTERN PLANT.

All Glasgow and South-Western vehicles, with folding end doors, have the handles for the Westinghouse stop-cocks of the main pipe standing the reverse way to those on other vehicles.

VEHICLES WORKING THROUGH SEVERN TUNNEL.

Not more than two carriages not fitted with a vacuum brake that will couple up to and work with the Great Western vacuum brake are permitted on any passenger train through the Severn Tunnel. The Caledonian Company's vehicles, fitted with the automatic vacuum brake (but not those fitted with simple vacuum only) work along with the Great Western vacuum brake.

GLASGOW AND SOUTH-WESTERN RAILWAY.

Notice.

WESTINGHOUSE CONTINUOUS BRAKE.

Description and Instructions for Working.

DESCRIPTION.

The air used to apply the brake is compressed by a small engine and pump placed on the locomotive. The driver or any of the guards can apply the brake, *and it applies itself in the case of a break-away, or the failure of any of its vital parts.*

The engine, tender, and each of the vehicles of the train is fitted with the following parts :—(1) a triple valve, (2) a supplementary air reservoir, and (3) a cylinder with piston rods; the latter in connection with (4) the brake lever and blocks.

When a train is made up and ready to start, and also when it is running, compressed air stands at about equal pressure throughout its length, that is to say, in the main reservoir, in the pipe from end to end of the train, in the triple valve and supplementary reservoir on each vehicle.

The brake is *applied* by a *decrease* of pressure in the main pipe. This causes the triple valves to move down, and to allow the air stored in the supplementary reservoirs to pass instantly into the cylinders, force out the pistons and rods, and cause the blocks to press against the tyres of the wheels.

The brake is *released* by an *increase* of pressure in the main pipe, by allowing air to pass from the main reservoir along the train. This moves the triple valves up, recharges the supplementary reservoirs, and at the same time allows the air which had forced out the pistons to escape into the atmosphere.

INSTRUCTIONS.

Drivers must see (1) that the top, or steam cylinder is kept well lubricated, (2) that the air cylinder is sparingly lubricated with a small quantity of refined petroleum,—other oils or tallow must not be used in the air cylinder,—(3) that the pump shall be constantly run, but never faster than is necessary to maintain the required air pressure,—and (4) that air from 50 to 60 pounds pressure for stopping trains, and from 70 to 80 pounds pressure for express trains, is carried.

For ordinary stops the brakes should be applied *lightly* by turning the handle of the driver's valve to the right, and *gently* closing it again, after a reduction of pressure in the brake pipe of not less than 5 lbs., nor more than 8 lbs. has been made. If the pressure runs up on the gauge when the handle is brought back, it shows that the valve has been shut too quickly.

In ordinary working the brakes are fully applied when the pressure shown on the gauge is reduced 25 lbs. Any further reduction is waste of air. In case of emergency, however, the handle must be turned so as to let all the air in the brake pipe escape.

Long trains require more careful handling than short trains, and a greater quantity of air must be discharged from the brake pipe to make the same reduction per square inch on the gauge.

In releasing the brakes the handle must be moved quite against the stop to the left and kept there for about *ten seconds*, and then moved back against the intermediate stop, which is the feed position, and *where it must remain whilst the train is running.*

Drivers must always satisfy themselves that the brake coupling on their engine is properly connected to that on the train, and that the *cocks in the brake pipe are open.*

Drivers, upon feeling that the brakes have been applied by the guard, or automatically, must at once aid in stopping the train by turning the handle of the brake-valve towards the right, thus preventing escape of air from the main reservoir.

The blocks of the driving wheel brake should be so adjusted by turning the screw that the pistons travel from 3 to 4 inches.

Drivers must be careful to drain the water out of the main reservoir once a week, especially in winter time.

If vehicles having different air pressures be coupled together, the brakes will apply themselves on those which have the highest pressure. To ensure the certain release of all the brakes in the train, and also that trains may be charged quickly, the driver must carry the maximum pressure in the main reservoir before connecting to a train; and then put the handle of his brake-valve in the release position until the train is charged with air. If the brakes on the engine and tender thus apply themselves by being coupled to a train not charged, they should at once be taken off by opening the release valves from the brake cylinders, which ought to be so arranged as to be *worked from the foot-plate.*

After connecting the engine to the train, or after new vehicles have been added, the pipes and reservoirs are to be charged as quickly as possible.

Guards.—Before leaving the terminus, after adding to or detaching from a train on the journey, or on another engine being attached, the rear guard shall ascertain whether the couplings are connected, and the cocks in the brake pipe are all open throughout the train, by applying the brakes from his van and seeing that *they are released from the engine.* If the brake is not in use on the whole train, or if the van is not the last vehicle, the test should be made by opening the cock in the brake pipe of the last vehicle connected.

Guards, when they have occasion to apply the brake from their van, must open the tap and allow the air to escape until the train is brought to a standstill, but they should only use the brake in cases of emergency.

Guards must, in all cases, screw the *hand brakes clear off* before starting.

General.—Before detaching the engine or any carriages the brakes must be *fully released on the whole train.* Neglecting this precaution, or setting the brakes by opening a valve or tap when the engine is away, may cause serious inconvenience in shunting. The pipes and joints must be kept tight, and when leaks are discovered they should be corrected, if serious, before the vehicle is again used.

The brake pipe has a tap at each end of every vehicle, all of which must be open when the couplings are united except the one at the rear of the train. *These taps must always be opened after connecting the hose couplings, and always closed before separating them.*

If the brakes are applied by the separation of the train, or the breaking of a pipe, they can be released by opening the small release valves in the brake cylinder or pipes leading thereto. If the brakes are applied after the engine has been disconnected, they can be released as above, or by again connecting to the engine.

The brake of any vehicle can be put out of operation, without affecting the others, by closing the tap under that vehicle between the brake pipe and triple valve.

Inspectors should see (1) that the brake connections are perfect and properly adjusted for the wear of the blocks and wheels by being *uniformly* taken up. The pistons of double-piston cylinders should each travel not less than 2 nor more than 4 inches. Those of single-piston cylinders should not travel less than 4 nor more than 8 inches. (2) That the brake cylinders are perfect, and lubricated at least every three months with *mineral oil.* (3) That the hose couplings are united, and the cocks in the pipes are open; that is, the handles must stand across or away from the pipe, except the one at the end of the train, which must lie along the pipe in the shut-off position. (4) That the joints are all air tight.

Note.—No. 3 refers to traffic platform inspector or foreman, who will also see that the hose coupling, when not used for connecting the brake between two vehicles, must be attached to the dummy coupling.

Drivers and guards must at all times arrange to control their trains in approaching terminal stations by the ordinary hand brakes upon the tenders and brake vans, so as not to require the use of the air brakes, unless as an emergency brake, at such places

W. J. WAINWRIGHT,
General Manager.
Glasgow,
26th December 1881.

THE VACUUM AUTOMATIC BRAKE.

This brake can be applied throughout the train by the driver from his engine, or by the guard from his van.

Driver's Instructions.—Before starting see that your gauge indicates at least 18 inches of vacuum. This is done by admitting steam to the small ejector by means of a steam-cock placed for that purpose. To apply the brake, move the lever on the combination ejector to "On." In ordinary running this lever must stand at "Running position." To release the brake, move the lever to position "Off." *When the vacuum is suddenly destroyed in the main pipe the brake is full "On."* When separated from your train see that the couplings are placed upon the dummies fixed for that purpose.

Guard's Instructions.—To apply the brake, press down the lever on the valve placed in the guard's van. This admits air throughout the train pipe, and is to be only employed in cases of emergency. This valve opens automatically when the brake is applied with full force by the driver, and ensures rapid action. See that all pipes between carriages are properly coupled together, and that the couplings on the end coaches are placed upon the dummies. See by your gauge that a vacuum of 18 inches is maintained. Report otherwise to driver.

General Instructions.—To release the brakes for shunting purposes (the engine having left the train), first see that the hose coupling at one end of the train is off the dummy, then pull the cord which is fixed under the body of each carriage, as indicated by the arrows. This admits air to the top side of the cylinder, and the brakes come off by gravity.

GREAT NORTH OF SCOTLAND.

WESTINGHOUSE CONTINUOUS BRAKE.

Description and Instructions for Working.

DESCRIPTION.

The air used to apply the brake is compressed by a small engine and pump placed on the locomotive. The driver or any of the guards can apply the brake, and it applies itself in the case of a break-away, or the failure of any of its vital parts.

The engine, tender, and each of the vehicles of the train is fitted with the following parts: (1) a triple valve, (2) a supplementary air-reservoir, and (3) a cylinder with piston-rods, the latter in connexion with (4) the brake-lever and blocks.

When a train is made up and ready to start, and also when it is running, compressed air stands at equal pressure throughout its length, that is to say, in the main reservoir, in the pipe from end to end of the train, in the triple valve and supplementary reservoir on each vehicle.

The brake is applied by a decrease of pressure in the main pipe. This causes the triple valves to move down, and to allow the air stored in the supplementary reservoirs to pass instantly into the cylinders, force out the pistons and rods, and cause the blocks to press against the tyres of the wheels.

The brake is released by an increase of pressure in the main pipe, by allowing air to pass from the main reservoir along the train. This moves the triple valves up, recharges the supplementary reservoirs, and at the same time allows the air which had forced out the pistons to escape into the atmosphere.

INSTRUCTIONS.

Drivers must see (1) that the top or steam cylinder is kept well lubricated; (2) that the air cylinder is sparingly lubricated with a small quantity of refined petroleum—*tallow or oil must not be used in the air cylinder*; (3) that the pumps shall be constantly run, but never faster than is necessary to maintain the required air-pressure; and (4) *that air from 50 to 60 pounds pressure for stopping trains, and from 70 to 80 pounds pressure for express trains, is carried.*

For ordinary stops the brakes should be applied lightly, by opening the valve and closing it gently when the pressure has been reduced from 4 to 8 lbs. on the gauge.

The brakes are fully applied when the pressure shown on the gauge is reduced 25 lbs. Any further reduction would be waste of air.

In releasing the brakes the handle must be moved quite against the stop, and kept there for about 10 seconds, and then moved back against the intermediate stop, which is the feed position, and *where it must remain whilst the train is running.*

Drivers, upon feeling that the brakes have been applied by the guard or automatically, must at once aid in stopping the train by turning the handle of the brake-valve towards the right, thus preventing escape of air from the main reservoir.

The blocks of the driving-wheel brake should be so adjusted, by turning the screw, that the pistons move up from 3 to 4 inches.

Drivers must be careful to drain the water out of the main reservoir once a week, especially in winter time. If vehicles having different air-pressures be coupled together, the brakes will apply themselves on those which have the highest pressure. To ensure the certain release of all the brakes in the train and also that trains may be charged quickly, the driver must carry the maximum pressure in the main reservoir before connecting to a train, and then put the handle of his brake-valve in the release position until the train is charged with air. If the brakes on the engine and tender thus apply themselves by being coupled to a train not charged, they should at once be taken off by opening the release-valves from the brake cylinders, which ought to be so arranged as to be worked from the foot plate.

Guards.—Before leaving the terminus, after adding to a train on the journey, or on another engine being attached, the rear guard shall ascertain whether the couplings are connected, and the cocks in the brake-pipe are all open throughout the train, by applying the brakes from his van and seeing that they are released from the engine. If the brake is not in use on the whole train, or if the van is not the last vehicle, the test must be made by opening the cock in the brake-pipe at the rear of the last vehicle connected.

The hose coupling, when not used for connecting the brake between two vehicles, must be attached to the dummy coupling. It is important to observe that the taps at the ends of the vehicles are open when the handles stand across or away from the line of pipes, and closed when parallel to or alongside the pipe.

Guards, when they have occasion to apply the brake from their van, must open the tap and allow the air to escape until the train is brought to a standstill, but they should only use the brake in cases of emergency.

Guards must in all cases screw the hand brakes clear off before starting.

General.—Before detaching the engine or any carriages, the brakes must be fully released on the whole train. Neglecting this precaution, or setting the brakes by opening a valve or tap when the engine is away, may cause serious inconvenience in shunting.

The pipes and joints must be kept tight, and when leaks are discovered they should be corrected, if serious, before the vehicle is again used.

If the brakes are applied by the separation of the train, or the breaking of a pipe, they can be released by opening the small release valves in the brake cylinder, or pipes leading thereto. If the brakes are applied after the engine has been disconnected, they can be released as above, or by again connecting to the engine.

The brakes of any vehicles can be put out of operation, without affecting the others, by closing the taps under those vehicles, between the brake-pipe and triple valve.

Inspectors should see (1) that the brake connexions are perfect, and properly adjusted for the wear of the blocks and wheels by being uniformly taken up. The pistons of double-piston cylinders should each travel not less than 2 nor more than 4 inches. Those of single-piston cylinders should travel not less than 4 nor more than 8 inches. (2) That the brake-cylinders are perfect, and lubricated at least every six months with *mineral oil*; and (3) that the couplings and other parts are tight.

SPECIAL NOTES.

When vehicles not fitted with a continuous brake, or having connecting-pipes only, are attached to a train fitted with such brake, or to an engine having the brake on the engine wheels as well as the tender wheels, the guard in the rear van must, immediately upon the continuous or engine brake being applied by the driver, apply his hand-brake, and keep it tightly on either until the train has come to a stand or the driver has taken off his brake and is again going forward, as the case may be. This arrangement is necessary to prevent the rebound of the carriages and possible breaking of the drawbars, which may occur when a powerful brake is applied to the front portion of the train only.

Drivers and guards must at all times arrange to control their trains in approaching terminal stations by the ordinary hand brakes upon the tenders and brake vans, so as not to require the use of the air brake unless as an emergency brake at such places.

NORTH BRITISH RAILWAY.

WESTINGHOUSE AUTOMATIC AND CONTINUOUS BRAKE.

DESCRIPTION.

1. Compressed air is the agent employed to apply the brake. The air is compressed by a small engine and pump placed on the locomotive. The driver or any of the guards can apply the brake, and it applies itself in the case of a break-away, or the failure of any of its vital parts.

2. The tender and each of the vehicles of the train are fitted with the following parts:—(1) a triple valve, (2) a supplementary air reservoir, and (3), a cylinder with piston rod; the latter in connection with (4) the brake lever and blocks.

3. When a train is made up and ready to start, and also when it is running, compressed air stands at equal pressure throughout its length, that is to say, in the main reservoir, in the pipe from end to end of the train, and in the triple valve and supplementary reservoir on each vehicle.

4. To apply the brake, air is allowed by the driver to escape, or, in an emergency, by any of the guards. This causes the triple valves to move down, the air stored in the supplementary reservoirs to pass instantly into the cylinders, the pistons and rods to be forced out, and the blocks to press against the tyres of the wheels.

5. To release the blocks from the wheels, air is allowed to pass from the main reservoir along the train. This moves the triple valves up, recharges the supplementary reservoirs, and at the same time allows the air which had forced out the pistons to escape into the atmosphere.

INSTRUCTIONS.

6. *Drivers* must see (1) that the steam cylinder is kept well lubricated, (2) that the air pump is sparingly lubricated with a small quantity of mineral oil,—tallow or lard oil must not be used in the air pump,—(3) that the pump is constantly run, but *never faster than is necessary to maintain the required air pressure*,—and (4) *that air of about sixty pounds pressure is carried.*

7. The brakes must not be used with more than half the full force, except in case of danger.

8. The brakes are fully set when the pressure shown on the gauge is reduced 25 lbs. Any further reduction would be waste of air.

9. To apply the brakes lightly, the tap must be partially opened and *gently* closed when the pressure has been reduced from 4 to 8 lbs.

10. In releasing the brakes the handle must be moved against the stop and kept there for about five seconds, and then moved back just far enough to stop the escape of air from the top of the tap.

11. Drivers, upon feeling the brakes are applied, must at once aid in stopping the train by turning the three-way cock and preventing escape of air from the main reservoir.

12. The blocks of the driving wheels must be so adjusted by turning the screw that the pistons only move up from 3 to 4 inches.

13. Drivers are hereby reminded of the following rule, as contained at page 130 of the book of rules and regulations, viz:—

Rule 267a. It is the duty of the engine-driver of a train provided with a continuous brake, before starting the train, and at places where the engines are changed, to ascertain from the head guard the number of vehicles there are on the train, and upon how many of them the brake can be applied, and when any vehicles are attached or detached on the journey, the engine-driver must ascertain whether the attaching or detaching of such vehicles will interfere with the working of the brake on the whole or a portion of the train, and if the latter, to what extent.

14. *Guards*.—On all trains provided with a continuous brake where there are more than one guard, the guard riding in the rear van for the time being will be held to be the head guard.

15. In order to prove whether the continuous brake is connected throughout, the guard in the rear van must, after the engine has been coupled on to the train, examine the pressure in the gauge, at the same time lifting the handle of the valve and ascertaining that air escapes. If the brake is not in use on every vehicle in the train, or, if the van is not the last vehicle, the test must be made by opening the cock in the brake pipe of the last vehicle connected, which must be one having the *brake apparatus complete*. (See clause 2.) These tests must be made on the following occasions:—(1) Before commencing the journey—invariably whether the train starts from a terminal or roadside station; (2) On the journey—invariably whenever vehicles are added to or taken off the train or any change is made in the engine or the engine is reversed.

16. Guards, when they have occasion to apply the continuous brake from a van, must hold the handle and allow the air to escape until the train is brought to a standstill, but must only use the brake in case of emergency.

17. When any vehicles not fitted with a continuous brake, or having connecting pipes only, are attached to a train fitted with such brake, the guard in the rear van must immediately, upon the continuous brake being applied by the driver, apply his hand brake,

and keep it tightly on, either until the train has come to a stand, or the driver has taken off the continuous brake, and is again going forward, as the case may be. This arrangement is necessary to prevent the rebound of the carriages, which may occur with trains composed of vehicles when only partially fitted with continuous brake.

18. Guards must, in all cases, screw the hand-brakes clear off before starting.

19. Guards are hereby reminded of the following rule as contained at pages 112 and 113 of the book of rules and regulations, viz. :—

Rule 235a. The head guard of a train provided with a continuous brake must, before starting the train and at places where the engines are changed, inform the engine-driver the number of vehicles there are on the train and upon how many of them the brake can be applied; and when any vehicles are attached or detached on the journey, the engine-driver must be advised, and told whether the attaching or detaching of such vehicles will interfere with the working of the brake on the whole or a portion of the train, and if the latter, to what extent.

20. *General.*— Before detaching the engine, the brakes must be fully released on the whole train. Neglecting this precaution, or setting the brakes by opening a valve or tap when the engine is away, may cause serious inconvenience in shunting. The pipes and joints must be kept tight, and when leaks are discovered they must be corrected, if serious, before the vehicle is again used.

21. The brake pipe has a tap at each end of every vehicle, all of which taps should be open when the hose couplings are united, except the one at the rear of the train. These taps must always be opened *after* connecting the hose couplings and closed *before* separating them.

22. If the brakes are applied by the separation of the train, or the breaking of a pipe, they can be released by opening the small taps in the brake cylinder or pipes leading thereto. These taps, after the release of the brakes, must be closed. If the brakes are applied after the engine has been disconnected, they can be released as above, or by again connecting.

23. It is important to observe that the taps at the ends of the vehicles are open when the handles stand across, or away from the line of pipe, and closed when parallel to, or alongside, the pipe.

24. When the handle of the tap of the triple valve stands across, or away from the valve, it is set for the automatic brake. When against the stop at an angle of 45°, the brake is thrown out of use on the carriage.

25. Care must be taken (1) that the brake connections are perfect and properly adjusted for the wear of the blocks and wheels, (2) that the brake cylinders are perfect and lubricated occasionally with *mineral oil*, and (3) that the couplings and other parts are tight.

Application of Westinghouse Brake.

The attention of engine-drivers and firemen is specially called to the following Standard Instructions issued by the Westinghouse Brake Company :—

“Engine-drivers must exercise care and moderation in applying the brakes for ordinary stops, so as to bring their trains to rest without inconvenience to the passengers and to avoid damage to couplings.

“To ensure this, it is necessary that the brakes should be applied moderately in the first instance at a distance of several hundred yards from the station. *Just before coming to a stand the brakes should be released*, so as to avoid any jerk, and the *hand brake* on engine or tender must be applied to stop and hold the train.”

Engine-drivers and firemen are requested to carry out these instructions carefully; any failure to comply therewith will be seriously noticed.

BELFAST AND NORTHERN COUNTIES RAILWAY.

ARRANGEMENTS FOR WORKING VACUUM AUTOMATIC BRAKES.

All trains working with the automatic brake are to be controlled by drivers only. The guards are not to apply these brakes except in cases of emergency.

When entering terminal stations these brakes will not be used; it will, therefore, be necessary for the drivers and guards to use the hand-brakes, as they have formerly been in the habit of doing.

Before starting, the vacuum gauges in engine and brake-van must indicate a vacuum of at least 15 inches, and this vacuum must be constantly maintained, excepting, of course, when air is admitted to apply the brakes.

On arrival at a terminal or other station where the vehicles are to be shunted or taken on by an engine not fitted with the automatic brake, it will be necessary to go to each vehicle in turn to leak the brakes off by pulling the wire placed under the frames for that purpose, before the vehicles can be moved.

The driver of a train provided with continuous brakes must be informed by the guard before starting, and at places where engines are changed, how many vehicles there are on the train, and upon how many of them the brake can be applied; and when any vehicles are attached on the journey the driver must be told whether the attaching of such vehicles will interfere with the working of the brake on the whole or any portion of the train, and if the latter, to what extent. The driver must see he gets this information.

When vehicles are supplied with connecting pipes only they must be considered as vehicles without brakes.

When vehicles not fitted with the continuous brake, or having connecting pipes only, are attached in rear of a train fitted with such brake, the guard in the rear van of such portion must, immediately upon the continuous brake being applied, apply his hand-brake, and keep it tightly on either until the train has come to a stand, or the driver has taken off the continuous brake, as the case may be. This arrangement is necessary to prevent the rebound of the carriages and possible breakage of drawbars, which may occur when a powerful brake is applied to the front portion of a train only. Vehicles fitted with connecting pipe only should, when possible, be placed between the engine and carriages, or as near the engine as possible.

It is the guard's duty before starting to see that all pipes between the vehicles are properly coupled together, and that the pipe at rear of last vehicle is placed on the iron plug fixed for that purpose to the train pipe.

Guards and drivers must report all irregularities in the working of trains fitted with the automatic vacuum brake.

Guards to note in journal, and drivers to note on mileage sheets trains worked with continuous brakes.

INSTRUCTIONS FOR WORKING THE SIMPLE VACUUM BRAKE.

1. All trains on which this brake is fitted will be controlled by the driver only, unless the guards are specially called upon to apply their brakes by the usual whistle signal.

2. In using this brake, the force to be applied must not exceed 15 inches on the vacuum gauge. The drivers must shut off steam and apply the brake, so that the stoppage can be properly effected with this power.

3. The excess of power beyond 15 inches of vacuum is not to be used, except in cases of emergency, such as an unusual stoppage or accident to train or engine.

4. Before starting with the train the driver is to test the connecting pipe, to see if it is properly coupled up,

by turning steam into the ejector. If it is all right the gauge will show it by the pointer remaining where carried by the vacuum.

5. The use of this brake is intended to control the speed on inclines, to give greater certainty in making stoppages, and to prevent the skidding of wheels. Drivers are cautioned against reckless running into a station and skidding the wheels to stop.

6. *In approaching a terminal station, the train is to be completely under control before the engine reaches the platform, so that a careful stop may be made, if necessary, by the hand brake of the engine only.*

7. Should an engine, fitted with this brake, have any defect in the ejector or pipes, the driver must, before starting with the train, give the guard notice that the hand brakes will require to be used, so as to avoid the necessity for calling on him to apply the brake on approaching each station.

8. The guard will be required, before starting with a train, to see that the engine is properly fitted, as, should an engine be on the train not provided with the ejector, the brakes will have to be used in the usual way, by hand.

9. When the pipe between the engine and train, or between the carriages, is disconnected, the couplings must be placed on the plug stops provided for the purpose.

10. The words "Vacuum Brake" to be written at the top of guard's journal for every train on which the vacuum brake is used. Guard is also to note on his journal particulars of every case of brake failing to act when required.

CAVAN, LEITRIM, AND ROSCOMMON LIGHT RAILWAY AND TRAMWAY.

INSTRUCTIONS FOR WORKING THE AUTOMATIC VACUUM BRAKE.

The brake can be applied throughout the train by the driver from the engine or by the guard from the van.

Creating Vacuum.—The engine having been coupled to the train and the hose coupling between the tender and train, also those between the vehicles connected and the one at the end of the train placed upon the plug, the driver admits steam to the small ejector which will soon exhaust the train pipe and cylinders, to a vacuum of 20 to 24 inches, or the large ejector may be used if the vacuum is required to be obtained more rapidly. The small ejector must be kept at work continuously to maintain the vacuum.

Before starting the driver must see that the gauge indicates at least 18 inches of vacuum, and that not less than this amount is maintained during the journey and while standing at stations. The vacuum is created by admitting steam to the small ejector, by means of the steam cock on combination ejector.

To apply the brake, move the handle on combination ejector in the direction marked "BRAKE ON."

To release the brake, move the handle on combination ejector in the direction marked "BRAKE OFF."

In ordinary running this handle must stand at "RUNNING POSITION."

When the guard has occasion to apply the brake, he must press down the handle on the valve placed in his van. This admits air throughout the train pipe, and is only to be employed in cases of emergency. The valve in the van opens automatically when the brake is applied suddenly by the driver, and ensures rapid action. The guard must see by the gauge in his van that a vacuum of at least 18 inches is maintained, or report otherwise to the driver. He must also see that all pipes between the carriages and engine are properly coupled together, and that the coupling on the last vehicle is placed upon the plug.

Whenever the pipes between the vehicles are disconnected the coupling must be placed upon the stop plug at the end of the vehicle.

To release the brake for shunting purposes (the engine having left the train), first see that hose coupling at one end of the train is off the plug, then pull the wire or cord fixed under the frame of each carriage. This admits air to the top side of the cylinder and the brakes fall off by gravity.

To couple the pipes the guard or porter must take one in each hand, and lift them sufficiently high to hook the bottom horns of the coupling together first, and then, by lowering them, place the top horns of the couplings in the slots.

To uncouple the pipes the guard or porter must simply lift them straight up, when the horns at the top will come out of the slots and the coupling will then separate.

The responsibility for properly coupling up all vehicles rests with the station staff and the guard; and the driver is responsible for his engine being properly coupled up by his fireman.

URBAN BROUGHTON,
Traffic Manager.

CORK AND MUSKERRY LIGHT RAILWAY.

TRAINS WITH PATENT CONTINUOUS BRAKE.

Vehicles (not being fitted with the apparatus) must be put at the rear of these trains, in order to preserve the continuity of the brake connexions in front.

Not more than four may be attached behind the guard's van, and proper couplings must, in all cases, be used, care being observed to have the usual tail lamp on the last vehicle.

INSTRUCTIONS TO ENGINE DRIVERS.

Application of the Brakes.

Before starting at the beginning of each journey the train must be examined to see what number of brake-fitted vehicles are connected, and the number that are in the rear of the train not fitted with brakes, or, if fitted, are not under the control of the driver.

Ordinary stoppages must not be made too quickly, and to avoid this the brake must be applied slightly some distance from where the train is to be stopped, and the application of it gradually and uniformly increased until the train comes to a stand, and must at all times be released very cautiously, to prevent the jerk consequent on the rebound of the carriage buffers and the engine shooting ahead, and to avoid subjecting the couplings to undue strain, and the passengers to discomfort.

This method of application to be carefully attended to when there are vehicles in rear of the train not fitted with brakes, and in such cases it is the duty of the guard to apply the rear brake.

When approaching terminal stations, particularly on falling gradients, great care must be exercised to have the train so under control that, if required, it could be stopped by the tender brake before the engine reaches the station buffer-stop.

Drivers must satisfy themselves that the brake is at all times in good working order. Before starting from a terminal station they must never fail to put on the brakes, and notice if the ejectors maintain a good vacuum both with the engine and carriage brakes. They must from time to time test its working.

The tender hand brake is not to be used for ordinary stoppages, but must be used occasionally when running light, in order to its being kept in a state of efficiency for emergencies, and always at terminal stations.

GREAT SOUTHERN AND WESTERN (IRELAND) RAILWAY.

INSTRUCTIONS FOR WORKING CONTINUOUS BRAKES.

A large number of carriages and engines are now fitted with the patent vacuum brake; and the attention of station masters, inspectors, guards, drivers,

firemen, porters, and others is called to the following instructions for working the brake:—

1. The brake is applied by the driver from the engine, and engine-men must test their brake when approaching stations at which they are appointed to stop, and must satisfy themselves it is in working order, and be prepared to bring their train to a stand by the use of the hand brakes, should necessity require it. Guards must keep a good look-out, and be ready to apply their brakes at any moment, for which they will be held responsible.

2. Station masters, inspectors, and foremen must give special attention to the proper coupling of the air brake pipes, and make such arrangements as will insure these pipes being cared for and not improperly used; and experienced men must be selected to couple together the pipes of the vehicles fitted with the vacuum brake, and instructed that the springs on the right-hand couplings are to be carefully put through the notches on the left-hand couplings, and then twisted round at right angles to the notches.

3. The guards must see that the pipes of the air brakes on their trains are properly coupled together before starting, and whenever any engine or vehicle is attached or detached; and they must, as far as possible, whenever the train stops at a station, examine the pipes and see that they are in good order.

4. Carriage examiners at terminal stations must ascertain from the driver, as soon as he has coupled up to his train and tried his brake, whether the pipes are air-tight; and examiners at Portarlinton, Limerick Junction, and Mallow must ascertain at once on arrival, from the drivers of trains fitted with vacuum brakes, whether any leakage has been found in the train pipes; and if so, must ascertain where it is, disconnecting the pipes of the faulty vehicle if necessary. If any defect is found, it must be immediately reported to their inspector.

5. Vehicles which are fitted with the continuous brake must only be used on continuous brake trains, or as through carriages in branch trains in connection with continuous brake trains. Any spare vehicles which are fitted with the continuous brake must be worked up to Kingsbridge.

6. When vehicles fitted with this brake are left in sidings or at stations, the brake pipes of each vehicle must be coupled together, and not left hanging loose. Porters and others are cautioned that *they must not step upon the brake pipes.*

7. Guards must enter on their journals full particulars of any defect, failure, or unsatisfactory working of the brake of their train, or any portion of the fittings, couplings, &c.

8. Terminal stations must be approached cautiously; and all trains working from Inchicore to Kingsbridge, and from Kilbarry to Cork, must be taken down the inclines with hand-brakes.

9. Ordinary stoppages must not be made too quickly, and to avoid this the brake must be applied slightly, some distance from where the train is to be stopped, and the application of it should be gradual and uniform.

10. Where a train is formed of continuous-braked vehicles in front, and hand-braked vehicles behind, the rear guard must put on his brake; and in order to prevent the rebound of carriage-buffers, his brake must be kept on till the train is again about to start.

11. Hand brakes alone to be used when stopping trains coming into terminal stations with blind ends (such as Queenstown, Youghal, or Cork, Summerhill,) the continuous brake being reserved for cases of necessity.

12. When using the continuous brake for stopping in the ordinary way at stations, drivers are not to use more than five inches of vacuum, and when coming to a stand they are not to put the brake on harder, but to slightly release it by opening the valve a little.

MIDLAND GREAT WESTERN RAILWAY.

RULES TO BE OBSERVED IN WORKING POWER BRAKES.

INSTRUCTIONS TO ENGINEMEN.

Continuous (Vacuum) Brakes applied to Passenger Engines and Carriages.

Before starting on the journey, when the engine is attached to the train, the driver must examine his train to see that all brake-fitted vehicles are connected, and he is to note the number (if any) in rear of the guard's van not so fitted, or, if fitted, which are not connected, so that he may know the amount of brake-power at his command.

At each intermediate station, where vehicles are taken on, or left off, it must be ascertained from the guard (whose duty it is to walk forward to the engine and give the information) to what extent the brake-power is affected by the altered composition of the train.

Ordinary stoppages must not be made too quickly, therefore the brake must be applied slightly some distance from where the train is to be stopped, and the application of it gradually and uniformly increased, until the train comes to a stand, and it must at all times be released very cautiously, to prevent the jerk consequent on the rebound of the carriage buffers and the engine shooting ahead, and to avoid subjecting the couplings to undue strain and the passengers to discomfort.

Especial care to be observed when there are vehicles in rear not fitted with brakes.

When approaching terminal stations, particularly on falling gradients, great care must be exercised, so that the stopping of the train may be under the driver's complete control. *All trains are to be stopped at every terminal and junction station by hand-brakes only*, except in case of failure of the hand-brakes, or in the event of some sudden danger arising that calls for the instant pulling up of the train, then the power-brake is to be used.

Drivers must satisfy themselves that the brake is at all times in working order. Before starting from a terminal station they are to put on the brakes and notice if the ejectors maintain a good vacuum both with the engine and carriage brakes. They must from time to time test its working.

Each engine and guard's van will be fitted with a "tell-tale" vacuum gauge. When the vehicles are all coupled together and attached to the engine and a vacuum maintained in the pipes, then the gauge will show the word "right." When the engine is detached, or any of the vehicles separated, the dial will show the word "wrong," which means that the brake is not in working order. This may result from the connecting air-pipes between the carriages not having been coupled up, through some accident to the pipes, or to the vacuum cylinders, or from part of the train becoming detached.

Whatever the cause, when the dial shows "wrong," it is to be understood the vacuum-brake is defective, and no longer to be relied on, and recourse must then be had to the hand-brakes, and prompt steps taken to remedy any accident or make good any defect that may have taken place.

In addition to the tender hand-brake being *always* used when coming into a terminal station it must be used occasionally when running light, to insure its being kept in good working order.

It is the duty of the fireman to couple the air-pipe of the engine to the air-pipe of the train before starting, and to detach it at the end of the journey; and if the pipes between the tender and the next vehicle to it have been uncoupled at intermediate stations for shunting or other purposes, the fireman must see that they are properly coupled before the train starts, and the driver is to see that the fireman properly carries out this work.

INSTRUCTIONS TO GUARDS.

The head guard must examine the train to see the number of brake-connected vehicles, and to give the necessary information, mentioned above, to the driver; and when there are vehicles over which the driver has no brake-control, the guards must give the necessary attention to the hand-brake. The working of the continuous brakes by the driver will not relieve the guards from any responsibility; they must keep a good look-out, and be prepared to apply the hand-brakes whenever any necessity arises. At terminal stations guards must apply their hand-brakes should they think the driver has not his train well in hand, or that there is the least risk of touching the buffer-stops.

The guards of the train must examine the couplings at each station where the stopping time will admit of it, and satisfy themselves, before ordering the train to start, that the pipes are firmly and properly coupled, and that the couplings and pipes are in thoroughly good order.

Guards must enter on their journals full particulars of any defect, failure, or unsatisfactory working of the brakes of their train, or any portion of the fittings, couplings, &c. They must also enter upon their journals any sudden stop made by the application of the power-brake, and state the circumstances.

Guards are required to read, and to make themselves thoroughly conversant with, the *Instructions to Drivers* on the working of continuous brakes; and their special attention is called to the Rule for the application of hand-brakes with mixed and goods trains, and to the use of hand-brakes when coming into all terminal stations.

GENERAL INSTRUCTIONS.

Station-masters, inspectors, and foremen must give special attention to the proper coupling of the air-brake-pipes by experienced porters, and must carefully examine the couplings before starting the train. They must make such arrangements as will insure these pipes being cared for, and in no way improperly used.

All the vehicles composing the train are to be coupled tightly together to prevent excessive action of the buffers of the carriages when the brake is applied, and to insure that the air-pipes will not be disconnected by any strain that may be put upon the drawbars.

It is the duty of the staff at stations to adjust the couplings and air-pipes of the carriages properly, and it is the duty of the fireman to attach his engine to the train before starting, and to see to the brake-couplings between the engine and the train. The driver, at stations where trains are first started from, and the head guard at intermediate stations, where vehicles are taken on or left off, are responsible for seeing that the couplings and air-pipes of the carriages composing the train are properly adjusted.

Care must be taken when, from any cause, vehicles fitted with the air-brake are detached from the train, and the pipes disconnected, that the pipes are again coupled; and when, in like manner, vehicles are attached to the train, the pipes must be properly coupled, so as to form continuous communication throughout the train, the pipe on the last brake-fitted vehicle being coupled to its "dummy."

When vehicles fitted with a continuous air-brake are left in sidings or at stations, the brake-pipes of each vehicle must be coupled to the "dummy" (fixed to each pipe) and not left hanging loose.

Porters and others are cautioned that, in passing between vehicles, *they must not step upon the brake-pipes*, or in any way interfere with the connexions.

Carriage trucks must always be put at the rear of trains.

WATERFORD AND LIMERICK RAILWAY.

INSTRUCTIONS FOR WORKING CONTINUOUS AUTOMATIC VACUUM BRAKE.

1. In the formation of trains, when the whole of the coaches are not fitted with the automatic vacuum brake, those that are so fitted must be placed together, and next to the engine. When the whole train is not fitted, the automatic vacuum brake must not be used for ordinary stoppages, but only in cases of emergency. In all cases where the automatic vacuum brake is only partially fitted to a train, a brake van, or a carriage, with a guard in it, must be the last passenger vehicle in the train, and this guard must apply his hand brake in running into all stations where the train is to be stopped.

2. The brake can be applied throughout the whole of the vehicles fitted with the apparatus by the engine-man from the engine, or by the guard from his van; but in order that this may be done, it is imperative that the flexible connexions between each carriage and between the engine and the train shall be properly coupled up.

3. Guards must never apply the automatic vacuum brake except in cases of absolute necessity, and whenever they do so a full report of the circumstances must be made on their journals; they must at all times be read to apply the *hand brake* should the engine-man call by whistle for its assistance.

4. When the automatic vacuum brake is to be used for the ordinary stoppage of trains, it must be by the engine-man opening the air valve on the engine, but it must be done gradually, and never suddenly or with full force, except in cases of emergency.

5. *In approaching junctions, terminal stations, or stations at which other trains may be standing on the same line of rails, or crossing stations on single lines, the automatic vacuum brake or steam brake must only be used in cases of emergency, the engine-men taking care to reduce the speed of the train so that the train may be brought to a stand by the hand brakes alone.*

6. In the event of a train parting, the guard in the rear portion must at once apply his hand brake, and keep it tightly screwed on until the train is again coupled to the engine.

7. In descending inclines the engine-man must, when necessary to reduce the speed, use the automatic vacuum brake in preference to the hand brakes.

8. The head guard, before giving the signal to start at the commencement of the journey, and at stations where any of the flexible pipes have been coupled or uncoupled, must ascertain and inform the engine-man—

1st. That all vehicles throughout the train fitted with the brakes have the flexible pipes properly coupled up.

2nd. That the flexible pipe at the rear of the last brake vehicle is properly placed upon the stop plug.

3rd. That 15 inches of vacuum is indicated by the gauge in the rear van on the train; and,

In the event of there being any vehicles on the train not fitted with the vacuum brake, the head guard must inform the engine-man of the fact before starting, so that the engine-man may know what number of vehicles he has control over, and what number are without the vacuum brake.

9. The engine-man, before starting at the commencement of the journey, and also at stations where any of the flexible pipes have been coupled or uncoupled, must ascertain from the guard the number of vehicles in the train fitted with the brake the flexible pipes of which are coupled up to the engine, and that a vacuum of at least 15 inches is shown by the gauge in the rear van. He must also be careful to see—

That the vacuum pipe of his engine is properly coupled up to the leading vehicle in the train.

That at least 15 inches of vacuum is indicated by the gauge on the engine.

10. If from any cause the engineman is unable to obtain at least 15 inches of vacuum, he must inform the guard of the fact, and they must work the train forward with the ordinary hand brakes.

11. Just before coming to a stand, after the application of the automatic vacuum brake at stations, or when stopped on the road, the engineman must use his ejector so as to partially release the continuous brake. This will prevent any rebound of the carriages, and will also enable the engineman to start his train immediately on receipt of the signal to do so.

12. When the pipes between the engine and train are disconnected, the couplings must be placed on the plug stops provided for the purpose. Detached carriages must always have the hose couplings placed on the plug stops.

13. At any station where there is any likelihood of vehicles being put on or taken off, the vacuum in the continuous pipe must be destroyed by opening the air valve on the engine, so that there may be no delay in coupling or uncoupling.

14. As india-rubber is dissolved by oil or grease, it is most important that nothing of a greasy nature should be applied to or allowed to reach the piston or piston rod. The only lubrication which is required is a little pure blacklead, which must be placed inside each cylinder by the persons appointed for the purpose. The other part of the brake must be cleaned and oiled by the examiners in the usual way.

15. In the case of vehicles fitted with the combined hand and vacuum brake, the guard must see before starting that the hand brake is screwed "full off," and the handle secured by means of the chain provided for that purpose.

16. It is necessary that the words "continuous brake train" shall be written at the top of the engineman's

train bill and guard's report for every train fitted with the automatic vacuum brake. It is also necessary for the engineman to show on his mileage ticket the trains which have been worked by him with a continuous brake during the week.

17. If from any cause the automatic vacuum brake is not used, or fails to act when required, or if there is any irregularity in its working, a remark to that effect must be made by the guard on his report, and by the engineman on his train bill, which must be accompanied by a special report giving full particulars of the irregularity.

18. Guards must take care during the journey that nothing in the van is allowed to rest against or in any way interfere with the lever of the brake setter.

19. When vehicles are supplied with connecting pipes only, they must be considered as vehicles without the brake, but the brake connexions must be made as described in clause 2.

20. When vehicles not fitted with a continuous brake, or having connecting pipes only, are attached to a train fitted with such brake, or to an engine having the brake on the engine wheels as well as the tender wheels, the guard in the rear van must, immediately upon the continuous or engine brake being applied by the driver, apply his hand brake, and keep it tightly on, either until the train has come to a stand, or the driver has taken off his brake, and is again going forward, as the case may be. This arrangement is necessary to prevent the rebound of the carriages and possible breaking of the drawbars which may occur when a powerful brake is applied to the front portion of trains only.

JOHN ROBERTS,
Traffic Manager.

JOHN G. ROBINSON,
Locomotive and Carriage Superintendent.
July, 1889.

3.—CIRCULAR of BOARD OF TRADE to RAILWAY COMPANIES.

Board of Trade, Railway Department,
30th August 1877.

SIR,

I AM directed by the Board of Trade to request that you will call the attention of the Directors of your Company to the paper which has recently been laid before Parliament, containing the correspondence that has taken place between the Board of Trade and the Railway Association relative to the use of continuous brakes, and to state that this Department have been giving further careful consideration to this important question, as will be seen by a reference to the General Report upon Railway Accidents for the year 1876 recently presented to Parliament.

In that Report will be found the details of the circumstances attending all the accidents which have been investigated by the officers of the Board of Trade during the past year; from a careful examination of which and similar information for the past few years, the Board of Trade are led to conclude that three fourths of those accidents might probably have been avoided, or the results materially mitigated, if the passenger trains concerned had been provided with continuous brakes.

In Mr. Leeman's letter of the 18th April, forming part of the correspondence above referred to, it is stated that it is "not essential that one form of brake should be invariably adopted." If by this it is meant that it is desirable to try every form of brake, and that it is not desirable by the exclusive adoption of one form to prevent the trial and introduction of better forms, the Board of Trade would entirely concur. But if it is meant that there would be no advantage in having one form of brake for all lines

which interchange traffic with one another, the Board of Trade hold a different opinion; for it appears to them obvious that in the interchange of rolling stock, including ordinary carriages, saloon and family carriages, horse boxes, carriage and fish trucks, and other vehicles forming part of passenger trains, between one line and another, if the brake fittings are not similar, the efficiency of the brakes must be proportionately impaired and that this must be especially the case where the lines of two or more companies are continuous.

The London and North-western, the Great Northern, and the Midland Companies all run through-trains to Scotland, which are forwarded over the Caledonian, North-eastern, North British, Glasgow and South-western, and Highland Railways. It is therefore obvious that the advantage to be derived from any continuous brake system in use on any of these lines will be diminished and neutralized if at such stations as Carlisle, Glasgow, York, Edinburgh, Perth, and Inverness the traffic is so arranged that carriages with one system of brakes are attached to trains containing carriages fitted with a different system. This evil can only be avoided if those companies which interchange traffic with one another adopt one and the same general system.

The Board of Trade therefore regret to observe from the returns forwarded, in the correspondence above alluded to not only that there is no immediate prospect of the adoption of any such general system even by companies owning continuous lines, but that many of the companies are not taking, and apparently refuse to take, any steps towards that end.

Referring to the merits of the different brakes now in use, or under experiment, as stated in the answers to the questions put by the Board of Trade, it is to be remarked that the statements of the different companies vary considerably, and are scarcely consistent with each other.

Thus the London and North-western Company express themselves satisfied with a mechanical continuous brake, which is reserved for cases of emergency, and which can only be applied throughout the train by the engine-drivers or guards through the intervention of a communication-cord.

No other great company appears to have even tried this brake. On the other hand, many companies speak in the highest terms of air or vacuum brakes, which are rejected in toto by the London and North-western Company. The Great Northern Company have adopted a vacuum brake, which is highly thought of, and which it is stated can be made self-acting, but which, so far as can be learned from the correspondence, does not at present possess that quality. The Midland, North-eastern, North British, and some other companies are stated to have tried or adopted brakes which are self-acting. On the other hand, the Manchester, Sheffield, and Lincolnshire Company seem to think that new elements of danger are produced by the practical operation of continuous brakes, though they do not say what those dangers are. It would be easy, but is scarcely necessary, to dwell at greater length on the different and even discordant views disclosed in the answers of the different companies.

Under these circumstances the Board of Trade, whilst recognizing the efforts which some of the companies are making in testing or adopting improved systems of brakes, cannot regard the state of things shown by these papers as satisfactory, inasmuch as it indicates a diversity of opinion and action and in some cases an absence of progress, which, if allowed to continue, will be most injurious to the character of the companies and to the interests of the public. There has apparently been no attempt on the part of the various companies to take the first step of agreeing upon what are the requirements which in their opinion are essential to a good continuous brake.

In the opinion of the Board of Trade these conditions should be as follows:—

- a. The brakes to be efficient in stopping trains, instantaneous in their action, and capable of being applied without difficulty by engine-drivers or guards.
- b. In case of accident to be instantaneously self-acting.

- c. The brakes to be put on and taken off (with facility) on the engine and every vehicle of a train.
- d. The brakes to be regularly used in daily working.
- e. The materials employed to be of a durable character, so as to be easily maintained and kept in order.

The inquiries and experiments instituted by the Royal Commission on Railway Accidents, and the recent researches into the causes of railway accidents during the last few years, appear to the Board of Trade to leave no doubt as to the importance of the above conditions, and the experience which has been obtained by the companies appears sufficient to enable them to come to some general and unanimous conclusion.

There can, therefore, be no reason for further delay, and the Board of Trade feel it their duty again to urge upon the railway companies the necessity for arriving at an immediate decision and united action in the matter.

The companies and their officers, who are as much interested as the public in the safe and efficient working of their railways, and upon whom devolves the adoption of proper systems of brake and of such other improvements as have been proved by past experience to be necessary in the interest of public safety, would do well to reflect that if a doubt should arise that from a conflict of interest or opinion, or from any other cause, they are not exerting themselves, it is obvious that they will call down upon themselves an interference which the Board of Trade, no less than the companies, desire to avoid.

In conclusion I am to call your attention to a notice which has already been given in Parliament for next session, for copies of any further correspondence between the Board of Trade and the Railway Companies with reference to the progress made in brake power; and in order that the Board of Trade may be in a position to furnish that information to Parliament, I am to request that the companies will from time to time furnish the Board with full accounts of any further experiments they may make, and of any steps which they may take for the adoption or extension of improved systems of brakes.

I am, &c.

The Secretary,

EDWARD STANHOPE.

Railway Company.

4.—COPY OF ACT.

(41 Vict. Chapter 20.)

A.D. 1878. **An Act to provide for returns respecting Continuous Brakes in use on Passenger Trains on Railways.** [17th June 1878.]

BE it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows :

Short title. 1. This Act may be cited as the Railway Returns (Continuous Brakes) Act, 1878.

Returns to be made twice a year by railway companies to Board of Trade respecting continuous brake. 2. Every railway company shall twice in every year make to the Board of Trade returns respecting the use of continuous brakes on the passenger trains running on the railways worked by such company.

The returns shall contain the particulars and be in the form specified in the schedule to this Act, or shall contain such other particulars and be in such other form as the Board of Trade from time to time prescribe ; and the Board of Trade may in any case dispense with any part of the returns where they deem the same inapplicable.

The returns shall be made for the six months ending on the last day of December and the last day of June in every year, or on such other days as the Board of Trade from time to time direct, and shall be made within fourteen days after the expiration of each six months.

Every return shall be signed by the officer of the company responsible for the correctness of the return, and by the chairman or deputy chairman of the directors of the company, or where there are no directors by the individual or one of the individuals bound to make the return.

Any railway company who fail to comply with this section shall be liable on summary conviction before a court of summary jurisdiction to a fine not exceeding five pounds for every day during which the default continues.

Any person who makes or is privy to the making of a return under this Act which is to his knowledge false in any particular shall be liable on summary conviction before a court of summary jurisdiction to a fine not exceeding fifty pounds.

34 & 35 Vict. c. 78. Expressions in this Act have the same meaning as they have in the Regulation of Railways Act, 1871.

SCHEDULE.

FORMS OF RETURN (AS AMENDED BY BOARD OF TRADE).

Return for the Six Months ending on the day of 18 of the Amount and Description of Continuous Brake Power in use on the Passenger Trains running on the railways worked by the Railway Company.

Name of Railway Company.	Name and Description of Brake or Brakes adopted by the Company and in use on Passenger Trains on Lines worked by them.	(1.) Whether the brakes are instantaneous in action and capable of being applied by engine-driver and guards. (2.) Whether self-acting. (3.) Whether capable of being applied to every vehicle of a train. (4.) Whether in regular use in daily working. (5.) Whether the materials employed are of a durable character, easily maintained and kept in order.	Amount of Stock fitted with Continuous Brakes.					Amount of Stock not fitted with Continuous Brakes.		Amount of Stock fitted during the above Six Months.				Special Rules under which the Continuous Brakes are worked.	
			NUMBER OF VEHICLES.					Number of Engines and Tenders (used for Passenger Trains) in which the Brakes can be applied to the Wheels.	Number of Engines and Tenders (used for Passenger Trains) in which the Brakes can be applied to the Wheels.	Number of Passenger Carriages and other Vehicles used for Passenger Trains	Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Number of Passenger Carriages and other Vehicles used for Passenger Trains.			
			Number of Engines and Tenders (used for Passenger Trains) fitted only with Apparatus for applying the Brake.	Fitted with Brake complete.	Fitted with Gear complete.	Fitted with Pipes and Connections for connecting the Brake.	Fitted with Chains or Connections for connecting the Brake.					Fitted only with Chains or Connections for connecting the Brake.			
(The amount of stock fitted with each description of Brake to be given.)														(The amount of stock for each description of Brake to be given.)	

No. 2.—RETURN for the Six Months ending on the day of 18 of all instances in which Continuous Brakes have failed to act when required to be brought into action, or have caused delay in the working of the trains on any railway worked by the Railway Company.

1. Name of Railway Company.	2. Name or description of Brake which failed or caused delay in any of the instances asked for in Column 4.	3. Date of Failure.	4. Instances under the three following heads separately of:— 1. Failure or partial failure to act when required in case of an accident to a train, or a collision between trains being imminent. 2. Failure or partial failure to act under ordinary circumstances. 3. Delay in the working of trains in consequence of defects in, or improper action of, the brakes, distinguishing whether they arose from neglect or inexperience of servants or failure of machinery or material.	5. Number of Miles run by Trains fitted with each description of Continuous Brake.
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Name of Railway Company.	Name of Railway worked by Company on which Passenger Train ran without Continuous Brake.	Number of Miles run by Passenger Trains without Continuous Brakes.
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For Her Majesty's Stationery Office.

GENERAL REPORT
TO THE
BOARD OF TRADE
IN REGARD TO THE
SHARE AND LOAN CAPITAL,
TRAFFIC IN PASSENGERS AND GOODS,
AND THE
WORKING EXPENDITURE
AND NET PROFITS FROM RAILWAY WORKING
OF THE
RAILWAY COMPANIES
OF THE
UNITED KINGDOM,
For the Year 1889.

Presented to both Houses of Parliament by Command of Her Majesty.



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1890.

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TO THE SECRETARY OF THE BOARD OF TRADE.

SIR,

WE beg leave to submit to you our annual report upon the capital, traffic, &c. of the railway companies of the United Kingdom for 1889, and we append the usual statistical tables in which the results of railway working for that year, as shown by the companies' returns, are compared with similar particulars for a number of years past. A glance at these tables will show at once that 1889 was a prosperous year for the railway companies. Owing to the general revival of the trade of the country more work was done and more money earned than in any previous year, and it is some time since we have been able to point to such satisfactory increases in traffic and revenue. It is true that the expenses of working also increased to a considerable extent last year, largely in consequence of advances in the prices of materials and in the rates of wages paid to workpeople, but notwithstanding this fact a larger net revenue remained as the final result of the year's operations than at any former period. The increase in the net earnings, too, was more than sufficient to counterbalance the additions which were made during the year to the capital of the companies, and the consequence is that the per-centage of net earnings to total capital for 1889 turns out to have been larger than in any year since 1883.

Following our usual practice we proceed to refer to the figures under the different heads in some detail.

Capital.

The amounts of the different descriptions of the capital of the companies are as usual stated in the appended Table No. 2. The total of all descriptions, share and loan, paid up amounted at the close of 1889 to nearly 876,600,000*l.*, the increase over the total for the previous year being somewhat less than 12,000,000*l.*, or not quite 1½ per cent. The following table, continued from last year's report, shows the gross amounts for each year since 1879 :

Year.	Amount of Capital.	Increase.
	£	£
1879	717,003,000	18,458,000
1880	728,317,000	11,314,000
1881	745,528,000	17,211,000
1882	767,900,000	22,372,000
1883	784,921,000	17,021,000
1884	801,464,000	16,543,000
1885	815,858,000	14,394,000
1886	828,344,000	12,486,000
1887	845,972,000	17,628,000
1888	864,696,000	18,724,000
1889	876,595,000	11,899,000

It will be seen from the above that the amount of the increase in 1889 was much smaller than usual, and it may be remarked that the total for last year appears to have been swollen to a less extent than in some former years by merely nominal additions. It may be mentioned also that the increase last year was not proportionally distributed among the various descriptions of capital, with the result that the per-centage of two of the groups to the total paid up has for the first time since 1879 been slightly varied. The amounts and proportions now are : Ordinary, 326,229,000*l.*, or 37 per cent. ; Guaranteed and Preference, 327,447,000*l.*, also about 37 per cent. ; and Loans and Debenture Stock, 222,919,000*l.*, or 26 per cent. Of the total increase of about 12,000,000*l.* about 4,000,000*l.* is due to each of these three groups.

Before quitting the subject of capital, reference may be made to the appended Table No. 3, which shows the computed average rates and gross amounts of dividend or interest paid upon each of the classes above mentioned. These results have been arrived at as in former years by calculations based upon the rates actually paid by the companies and the amounts of capital bearing each rate, but as some companies have invested portions of their capital in the stocks and shares of other companies the amounts so arrived at are, of course, somewhat in excess of the true totals. Thus, the table shows a total sum of 37,800,000*l.* as the computed payments as dividends and interest for 1889, the actual net receipts resulting from the year's working being just under 37,000,000*l.* The table is, however, a very useful one as indicating as nearly as possible what the actual amounts and average rates paid have been in the series of years shown, it being recollected that the above remarks apply equally to all the years for which the results are given. It will be seen, then, that the average rate computed as having been paid upon the total capital last year was 4·32 per cent., and that this rate has not been exceeded since 1883, when the average was 4·41 per cent., whilst in 1886 it was as low as 4·08 per cent. The increase in 1889 over 1888 is certainly only ·15, but to the ordinary shareholder this must appear satisfactory, inasmuch as almost the whole of the sum which it represents so falls as to be available for dividend on the ordinary capital alone, that is to say, on only about one-third of the total capital of all descriptions. In times of depression the diminution of revenue, whatever it may be, affects most severely the dividends on this class of capital, whilst, on the other hand, in times of returning prosperity we find the holders of ordinary stock reaping the chief benefit of the altered state of things. Consequently, on comparing 1889 with 1888, an increase of about 1,600,000*l.* is observed in the amount computed as having been paid as dividend on ordinary stock, bringing the average rate on such capital up to 4·66 per cent., or nearly a half per cent. more in 1889 than in the previous year. This rate of 4·66 per cent. is larger than the rate paid for any of the preceding five years, and larger too than the average for the whole of the previous 10 years shown in the table.

Traffic and Receipts therefrom.

We have stated above that more work was done and more money earned by the railway companies in 1889 than in any previous year, and we have referred to the satisfactory nature of the increase which took place under both heads last year as compared with 1888. As regards receipts, that increase was not confined to one source, but passenger traffic, goods traffic, and miscellaneous each contributed their share. The following table, comparing the figures for each of these groups for 1889 and 1888, shows this very clearly :—

Receipts from—	1889.	1888.	Increase.	
			Amount.	Per cent.
	Million £	Million £	Million £	
Passenger traffic - -	32·6	31·0	1·6	5·3
Goods traffic - - -	41·1	38·8	2·3	6·0
Miscellaneous* - -	3·3	3·1	0·2	4·9
Total - - -	77·0	72·9	4·1	5·7

* The Miscellaneous receipts include rents, tolls, revenue from steam-boats and other items.

There was thus a very considerable increase last year in each class of revenue, and an increase which, both in amount and proportion, has rarely been exceeded during the past 20 years. It must be recollected also that, taking one year with another, the gross earnings of the companies have been growing during the whole of this time, and that the increase which occurred in 1889 was upon amounts that had already reached very high figures. It may be interesting, as bearing upon the expansion of railway revenue, to bring together from former reports particulars as to the variations in the

gross receipts which have taken place, comparing each year with that immediately preceding. This is done in the following statement:—

	Increase.		Decrease.	
	Amount.	Per cent.	Amount.	Per cent.
	Million £		Million £	
Increase or decrease—				
1889 as compared with 1888	4.1	5.7	—	—
1888 " 1887	2.0	2.8	—	—
1887 " 1886	1.3	1.9	—	—
1886 " 1885	(fractional)	0.1	—	—
1885 " 1884	—	—	0.9	1.4
1884 " 1883	—	—	0.5	0.8
1883 " 1882	1.7	2.4	—	—
1882 " 1881	2.2	3.3	—	—
1881 " 1880	1.7	2.5	—	—
1880 " 1879	3.7	6.0	—	—

This statement speaks for itself, and fully confirms our remark as to 1889 having been a more than usually prosperous year for railway shareholders.

Passenger Traffic.

Analysing the figures of receipts from traffic further we notice that whereas, following a process which has been going on for the last few years, the numbers of first and second class passengers (excluding season-ticket holders) continued to show a falling off, the receipts from these classes actually increased; and that it is still to the third class passengers that the railway companies as a whole owe the great bulk of the revenue they derive from passenger traffic, and by far the larger part of the increased receipts from that source. This will be seen from the following table, showing the amounts received under each head of passenger traffic in 1889 and 1888:—

Receipts from—	1889.	1888.	Increase.	
			Amount.	Per cent.
Ordinary passengers:—	£	£	£	
First class	3,188,000	3,040,000	148,000	4.9
Second class	2,705,000	2,693,000	12,000	0.4
Third class	19,785,000	18,690,000	1,095,000	5.9
Season-ticket holders	2,196,000	2,051,000	145,000	7.1
Excess luggage, mails, &c.	4,757,000	4,510,000	247,000	5.5
Total	32,631,000	30,984,000	1,647,000	5.3

The increase of nearly 1,100,000*l.* in the receipts from third class passengers appears the more remarkable when it is considered that it is an addition to the already enormous sum of over 18½ millions, and that it does not appear to have been earned in any way at the expense of other classes of traffic. Roughly, it may be said that nearly 20 million pounds out of something over 32½ million pounds received from passenger traffic as a whole were contributed by third class passengers. It may be mentioned also that in the period from 1879 to 1889 the receipts from third class passengers, as shown in the appended Table No. 7, increased by a total sum of about 6,000,000*l.*, so that the increase of nearly 1,100,000*l.* which took place last year was considerably above the average. The increase, too, appears to have been pretty generally distributed among the leading railway companies, and was consequently not due to any special cause of a merely temporary nature.

Another interesting feature in the above statement is the advance in the amount of revenue derived from season-ticket holders. Relatively the amount of that advance is not perhaps an item of great importance, but it is an addition of over 7 per cent. to the revenue from this source in 1888, and is, therefore, even greater, proportionately, than

the increase in the receipts from the third class ordinary passengers. As in the case of the third class passenger receipts also, this increase in the revenue from season tickets in 1889 was considerably above the average increase under that head for several years past. It may make our references to the receipts from passengers more complete if we distribute, as far as we are able, the receipts from season-ticket holders according to the classes to which they belong, with a view to seeing how far the proportionate increase in each class, as shown above, would be varied by so doing. The returns furnished by the various companies enable us to make this distribution.

RECEIPTS FROM FIRST, SECOND, AND THIRD CLASS ORDINARY PASSENGERS AND SEASON-TICKET HOLDERS.

Receipts from	1889.	1888.	Increase.	
			Amount.	Per cent.
Ordinary and season ticket passengers :—	£	£	£	
First class - - -	4,102,000	3,900,000	202,000	5·2
Second class - - -	3,462,000	3,414,000	48,000	1·4
Third class - - -	20,304,000	19,155,000	1,149,000	6·0
Total - - -	27,872,000	26,474,000*	1,398,000	5·3

* Including small amounts on account of season ticket passengers, unclassified, viz., 5,000*l.* in 1888 and 4,000*l.* in 1889.

Thus, comparing 1888 and 1889, we find that, excluding season tickets, first class passenger receipts increased 4·9 per cent., second class 1·4 per cent., and third class 5·9 per cent.; including season tickets (and workmen's weekly tickets with the third class), the increases are, first class 5·2 per cent., second class 1·4 per cent., and third class 6·0 per cent.

Turning from the revenue from passenger traffic to the numbers of passengers conveyed, it will be obvious that the figures to be quoted must be very large indeed, but it must be remembered in referring to them that, large as they are, they do not represent the whole number of passenger journeys, as it is impossible to estimate with precision the number of journeys made by holders of season and periodical tickets. The following statement compares the number of ordinary passengers conveyed during each of the years 1888 and 1889 :—

—	1889.	1888.	Increase (+) or Decrease (—).	
			Number.	Per cent.
	No.	No.		
First class - - -	30,075,000	30,262,000	(—) 187,000	(—) 0·6
Second class - - -	62,688,000	63,304,000	(—) 616,000	(—) 1·0
Third class - - -	682,420,000	648,933,000	(+) 33,487,000	(+) 5·2
Total - - -	775,183,000	742,499,000	(+) 32,684,000	(+) 4·4

The decrease in the numbers of first and second class passengers, will be seen, upon reference to Table No. 9 in the Appendix, to be entirely due to Scotland. The returns for England and Wales and Ireland, show increases for both these classes, which are altogether out-balanced by the very large falling off in the figures for Scotland. In the same way, too, Scotland is the only one of the three divisions of the Kingdom in which a reduction occurred in the receipts from these classes of passengers, but here the decrease has been more than compensated by increased receipts for England and Ireland. As regards numbers, a large part of the decrease of 616,000 in the second class is accounted for by two companies (the City of Glasgow Union and the Glasgow and South-Western)

having ceased to carry this class of passengers, the one for nine months and the other for eleven months of the year. To this cause is due a falling off of 531,000 out of the total of 616,000, 241,000 being on account of the City of Glasgow Union and 290,000 on account of the Glasgow and South-Western. So far as can be gathered from the returns made by these companies, the cessation of the issue of second class tickets has not operated to swell the numbers of the higher class, as decreases are also observable in the numbers of first class passengers carried by both of them, which amount in the aggregate to 179,000. It would seem, however, that the passengers to whom all these decreases refer were formerly carried very short distances, the heavy reductions in the numbers which we have quoted not having caused so great a falling off in the receipts as might have been expected. The remaining reductions in the numbers of first and second class passengers may be more than accounted for, indirectly, by the causes just mentioned, the withdrawal of second class carriages from the trains of the City of Glasgow Union and the Glasgow and South-Western affecting, of course, the returns for the Caledonian and North British Companies, with whose systems the lines of the first-named companies are in communication. It is possible, too, that the numbers of all three classes of passengers for Scotland may have been injuriously affected, comparing 1889 with 1888, by a purely local cause, viz., the closing of the Glasgow International Exhibition.

Goods Traffic.

Turning to the receipts from goods traffic we find that there is a total increase, including all branches, amounting to nearly 2,331,000*l*. The receipts from the carriage of live stock have not, however, kept pace with those from the main items of goods traffic, there being in fact a slight falling off of 17,000*l*. from this source. The amounts received from each branch last year and in 1888 were as follow :—

Receipts from	1889.	1888.	Increase.	
			Amount.	Per Cent.
	£	£	£	
Mineral traffic - - -	17,052,000	16,159,000	893,000	5·5
General merchandise traffic -	22,694,000	21,240,000	1,454,000	6·8
Live stock - - -	1,340,000	1,357,000	*(-)17,000	*(-)1·3
Total - - -	41,086,000	38,756,000	2,330,000	6·0

* Decrease.

In spite of the slight decrease on account of live stock, the increased revenue from goods traffic must be considered even more satisfactory than that from passenger traffic which we have already noticed. Both from minerals and general merchandise the increase last year was very large; and at no time has the revenue derived from these sources been so great as in 1889. Nor can it be forgotten that railway business undoubtedly affords an index to the general state of the trade of the country. Records of our foreign trade exist in the official import and export statistics, and from the fluctuations in these some idea may be gained as to whether home trade is expanding or contracting. But there would always be some margin of uncertainty in judging of the progress of the whole business of the country by these statistics, if they stood alone, because the question of fluctuating prices comes in to complicate the matter. In the railway returns, however, this question does not arise. It is probable that, taking a series of years, the railway companies as a whole have been doing more work than they did formerly for the same amount of money, the tendency over a long period being to a reduction rather than to an increase in the gross earnings per train mile run. When, therefore, after taking note of these facts, we observe such a large increase of revenue from the carriage of goods up and down the country, and at the same time consider that during the previous ten years there have been several decreases to note, and that when there have been increases they have been much smaller in amount than those shown above, the figures must be viewed with more than ordinary satisfaction. It may

be useful to quote here the figures of tonnage conveyed during 1889 and the preceding year, confirming as they do our remarks as to the receipts derived from goods traffic.

	1889.	1888.	Increase.	
			Amount.	Per Cent.
Minerals conveyed	Million Tons. 211·8	Million Tons. 201·6	Million Tons. 10·2	5·1
General merchandise conveyed	85·7	80·1	5·6	7·0
Total	297·5	281·7	15·8	5·6

The close correspondence between the per-centage increase in the tonnage and the corresponding figure as to receipts will be noticed. The increase in the tonnage of minerals carried amounted to 5·1 per cent. upon the 1888 tonnage; the increased receipts amounted to 5·5 per cent. As to general merchandise, again, the increase in the tonnage was 7·0 per cent., and in the receipts 6·8 per cent. Whether or not the smaller rate of increase in the tonnage of "minerals" carried than in the receipts from mineral traffic may be due to a slight increase in charges for conveyance last year need not now be discussed. The figures would, perhaps, at first sight, give such an impression, but the increase, if any, must on the average have been slight.

A reference to Table No. 9. in the Appendix will show that in the period from 1879 to 1889 the tonnage of minerals carried has increased from 149½ million tons to 211¾ million tons; whilst, as to general merchandise, the increase has been from a little under 63 million tons to over 85½ million tons. In neither of these classes has the increase been continuous throughout, the figures having been almost stationary or showing actual decreases in the period from 1883 to 1886, corresponding with the period of decided trade depression.

The impression given by the railway traffic returns of an improvement in the general business of the country last year receives some confirmation from the statistics of pig iron produced and of coal raised, the one being the raw material of large industries and the other a necessity for most manufactures, and both requiring, more or less, a certain amount of conveyance by rail from the locality of production to the localities in which they are used or disposed of. The subjoined table gives these figures for 1889 and 1888, and also shows the shipments of coal from the United Kingdom and the quantity brought by rail and canal into London for both years, which it may be useful to quote in this connexion. The shipments may be referred to as bearing in some degree upon the quantities moved by railway, but at the same time the use made of canals as a means of transit must not be forgotten.

Quantity of	1889.	1888.	Increase.	
			Amount.	Per cent.
	Tons.	Tons.	Tons.	
Coal raised - - -	176,917,000	169,935,000	6,982,000	4·1
Pig iron produced - -	8,323,000	7,999,000	324,000	4·1
Coal shipped coastwise -	14,209,000	14,007,000	202,000	1·4
Coal exported abroad -	27,505,000	25,632,000	1,873,000	7·3
Coal brought to London by rail and canal -	7,896,000	7,645,000	251,000	3·3

Train Mileage.

In each of our last two reports we have given a statement showing the mileage travelled by trains for a period of 10 years distinguishing between passenger, goods, and mixed train mileage. We have on this occasion included these particulars in a new table which we have added to the Appendix, in which we further sub-divide the details so as to show the figures for England and Wales, Scotland, and Ireland separately, as well as for the Kingdom as a whole. We extract the following figures from this table and will only observe in regard to them that they also point to an actual increase of work done. At the same time it has again to be stated that the returns which are

annually rendered to the Board of Trade by the railway companies under Act of Parliament do not yet contain information as to the passenger mileage or the ton mileage, and the contention that the companies are doing more work than formerly for the same amount of money cannot be regarded as quite proved in their absence, although the figures given seem to indicate that such is the case.

MILEAGE travelled by TRAINS in 1889 and 1888.

—	Passenger Trains.	Goods Trains.	Total, including Mixed Trains.
1889	Million Miles. 161·1	Million Miles. 139·0	Million Miles. 303·1
1888	155·5	132·8	291·2
Increase -	{ 5·6 or 3·6 per cent.	{ 6·2 or 4·7 per cent.	{ 11·9 or 4·1 per cent.

Comparing these figures with those previously given we find in regard to passenger traffic that passengers increased as between 1888 and 1889 by 4·4 per cent., receipts by 5·3 per cent., and train mileage by 3·6 per cent. On the other hand the tonnage of goods conveyed increased by 5·6 per cent., while goods receipts increased by 6 per cent., and goods train mileage by 4·7 per cent.

An increase is also observable for the first time for several years in the receipts per train-mile from all sources of traffic (*see* Table No. 11). A reduction has been noticeable under this head year by year for a long time past, and will be seen to have been almost continuous for the entire period included in the table. The whole fall between 1879 and 1888, which was temporarily arrested only in 1882, was from 63·12*d.* to 57·48*d.*, or a decrease of 5·64*d.* per train-mile, whereas last year the figure was 58·37*d.* or over 3*d.* per train-mile run, more than in 1888. This sum of 58·37*d.* for 1889 was larger than for any year since 1884, when the gross traffic receipt per train-mile was 59·56*d.* Increases have also to be noticed in the receipts per train-mile from passenger trains and from goods trains, in the former from 47·37*d.* to 48·17*d.*, and in the latter from 69·62*d.* to 70·54*d.* These are increases which, having occurred in a single year, must be looked upon as being very considerable in these times.

Working Expenditure.

It would have been scarcely reasonable to have supposed that the increased traffic we have referred to could have been carried on, or the increased revenue earned, without some addition to the expenses of working. The increase in expenditure would, however, have been less than actually occurred last year, had it not been for two important factors, namely, variations in the prices of materials and in the rates of wages paid to workpeople. As it is, the whole increase in the expense of working amounts to 2,332,000*l.*, this being an advance of 6·2 per cent. upon the amount for the previous year. It may be noticed as a coincidence that the increase in the expenditure almost exactly balances the increase in the revenue from goods traffic (which was 2,331,000*l.*), thus leaving a sum about equal to the increase in the revenue from passenger traffic and miscellaneous sources combined as net profit. The actual amount of the net earnings of the companies last year was about 36,931,000*l.*, an increase of 1,798,000*l.* over the net earnings for 1888, and at the same time a larger amount than has ever before been reached. Concurrently, the investment of new capital during the year being smaller than usual, and only of moderate amount, the per-centage of net earnings to total capital, although not so large as in several of the last 20 years, was yet greater than in any of the preceding five years, and shows a rise in that per-centage of ·15 over the per-centage for 1888.

Referring to the table showing the working expenditure per train-mile, we notice an increase of about one halfpenny, namely, from 29·97*d.* in 1888 to 30·54*d.* in 1889. This increase is not so large as that observable in the receipts per train-mile, which amounted to ·89*d.*, leaving an increased net earning of ·32*d.* It should be observed that the course of the train-mileage expenditure appears from the tables to have followed in the main that of the train-mileage receipts. There has been a continuous reduction in both as between 1879 and 1888, broken only by a temporary rise in 1882, and an increase in 1889 bringing the figures up to about the level of 1885. It may be

interesting to place the figures side by side, with a view to showing the variations which have taken place in the net amount earned per train-mile run.

Years.	Traffic Receipts.		Working Expenditure.		Net Earnings.	
	Amount per Train-Mile.	Increase (+) or Decrease (-).	Amount per Train-Mile.	Increase (+) or Decrease (-).	Amount per Train-Mile.	Increase (+) or Decrease (-).
	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>
1879	63·12	—	33·00	—	30·12	—
1880	62·71	(-) 0·41	32·37	(-) 0·63	30·34	(+) 0·22
1881	61·74	(-) 0·97	32·28	(-) 0·09	29·46	(-) 0·88
1882	61·90	(+) 0·16	32·47	(+) 0·19	29·43	(-) 0·03
1883	60·88	(-) 1·02	32·17	(-) 0·30	28·71	(-) 0·72
1884	59·56	(-) 1·32	31·59	(-) 0·58	27·97	(-) 0·74
1885	58·19	(-) 1·37	30·93	(-) 0·66	27·26	(-) 0·71
1886	57·69	(-) 0·50	30·41	(-) 0·52	27·28	(+) 0·02
1887	57·63	(-) 0·06	30·26	(-) 0·15	27·37	(+) 0·09
1888	57·48	(-) 0·15	29·97	(-) 0·29	27·51	(+) 0·14
1889	58·37	(+) 0·89	30·54	(+) 0·57	27·83	(+) 0·32

In the 10 years from 1879 to 1888 there was thus a decrease under the head of receipts per train-mile of 5·64*d.*, in the working expenditure of 3·03*d.*, and in the net earnings of 2·61*d.*; the final result as to 1889 being to bring the net earnings per train-mile up to about the figure for 1884. The table would also seem to show that the practical limit of economical working under actual conditions, having regard to the effective maintenance and management of the railway system as a whole, still lies somewhere about half-a-crown per train-mile. The details of the train-mileage expenditure under the various headings of outlay for 1889 and 1888 are as follow:—

Expenditure on account of	Cost per Train-mile.		Increase or Decrease in 1889.	
	1889.	1888.	Increase.	Decrease.
	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>
Maintenance of way	5·19	5·10	0·09	—
Locomotive power	8·31	7·89	0·42	—
Rolling stock	2·98	3·02	—	0·04
Traffic expenses	9·71	9·68	0·03	—
General charges	1·39	1·42	—	0·03
Rates and taxes	1·76	1·78	—	0·02
Government duty*	0·27	0·27	—	—
Compensations :				
Personal injuries	0·20	0·08	0·12	—
Damage to goods	0·15	0·14	0·01	—
Legal and Parliamentary expenses	0·21	0·20	0·01	—
Miscellaneous	0·39	0·40	—	0·01
Total	30·54	29·97	0·57	—

* For Great Britain only. The railway passenger duty is not charged in Ireland.

As previously stated, the increased cost of working was principally caused by the increased cost of wages and materials. The three great heads of expense, viz., locomotive power, maintenance of way, and traffic expenses, account for 23·21*d.* out of the total of 30·54*d.* per train-mile, and in each of these items an increase is observable, which is in all probability due to a large extent to the causes mentioned. A saving appears to have been made under the heads of rolling stock and general charges, the former item including repairs and renewals of carriages and waggons, and the latter the general expenses of management, such as office charges, &c. One unsatisfactory feature has, however, to be noticed, and that is the increase which has occurred in the item of Compensation for Personal Injuries. This was considerable in 1889 both in amount and in proportion to the train-mileage, the gross increase being from 102,727*l.* in 1888 to 246,369*l.* in 1889, or more than double. It would be out of place here to enter into a discussion of the accidents which have given rise to the increased expenditure. The general tendency on the average still is for this item in railway expenses to diminish or remain at a low level, after a great diminution in recent years, as we have noticed in former reports.

Net Earnings and Dividends.

We have already stated that the net earnings of the railway companies last year amounted to a sum of about 36,931,000*l.*, this being an increase of 1,798,000*l.* or 5·1 per cent. over the net earnings of 1888. We have also pointed out that, as the increase in capital was only moderate in amount, the per-centage of net earnings to total capital increased from 4·06 per cent. in 1888 to 4·21 per cent. in 1889. The benefit of this increase was, of course, mainly reaped by the ordinary shareholder, and we consequently find that the average dividend paid on ordinary capital increased from 4·22 to 4·66 per cent.; whilst the average dividend on guaranteed and preference capital remained at the same figure as in 1888, viz., 4·12 per cent., and the average interest on the loan and debenture capital declined from 4·15 to 4·11 per cent. The per-centage of net earnings on total capital was, in fact, larger in 1889 than in any of the five years immediately preceding, and this was also the case with the average dividend or interest on all descriptions of capital taken together. As regards net earnings, again, a similar result to that mentioned above is shown if we exclude from consideration the receipts and expenses on account of miscellaneous items, such as rents, steamboats, &c., and confine the comparison to the results of railway working only; the proportion to capital is still larger than in any year since 1883. The reduction in the average interest on loans and debenture stock has also gone to swell the average rate paid on ordinary capital, and the increase here is therefore somewhat larger than the average paid on the total capital.

The following table, which is in the usual form, is a statement of the rates of interest or dividend paid on the different descriptions of capital in 1889 and the amount at each rate, and is a summary of Table No. 4 in the Appendix :—

Rate of Interest or Dividend.	Ordinary.		Guaranteed.		Preferential.		Loans and Debenture Stock.	
	Amount of Capital.	Per cent. of Total.	Amount of Capital.	Per cent. of Total.	Amount of Capital.	Per cent. of Total.	Amount of Capital.	Per cent. of Total.
Nil	£ 44,487,435	13·6	£ 60,920	0·1	£ 12,577,808	5·5	—	—
Not above 1 per cent.	2,640,187	0·8	16,500	0·0	370,000	0·2	417,365	0·2
Above 1 & not over 2 per cent.	2,885,299	0·9	101,180	0·1	215,990	0·1	131,901	0·1
" 2 " 3 "	37,397,172	11·4	—	—	1,377,403	0·6	7,461,880	3·3
" 3 " 4 "	25,001,997	7·7	55,094,383	56·2	158,819,481	69·2	161,118,427	72·3
" 4 " 5 "	55,576,419	17·0	38,591,952	39·4	52,576,786	22·9	52,107,138	23·4
" 5 " 6 "	66,142,891	20·3	4,119,580	4·2	3,294,104	1·4	1,671,070	0·7
" 6 " 7 "	20,645,462	6·3	—	—	—	—	—	—
" 7 " 8 "	67,413,652	20·7	—	—	13,540	0·0	11,200	0·0
" 8 " 9 "	3,509,510	1·1	2,000	0·0	—	—	—	—
" 9 " 10 "	350,000	0·1	50,000	0·0	—	—	—	—
" 10 " 12 "	—	—	—	—	—	—	—	—
" 12 " 13 "	179,534	0·1	—	—	165,000	0·1	—	—
Total	326,229,558	100·0	98,036,515	100·0	229,410,112	100·0	222,918,981	100·0

Comparing this statement with the corresponding one for 1888 published in last year's report, we notice some considerable alterations in the grouping of the ordinary capital. The advance referred to above affected this description of capital throughout. There is a decrease of about 3,000,000*l.* in the amount receiving no dividend, part of which apparently earned something under 1 per cent. There is a decrease of about 9,000,000*l.* in the amount receiving between 1 and 2 per cent., which seems to have all gone to swell the group immediately above. There is also a decrease of 5,000,000*l.* in the group receiving between 4 and 5 per cent., a decrease of 14,000,000*l.* in the group receiving between 5 and 6 per cent., and a further decrease of nearly 42,000,000*l.* in that receiving between 6 and 7 per cent.; the accumulation of these decreases previously receiving between 4 and 7 per cent. resulting in the enormous addition of over 64,000,000*l.* to the group receiving between 7 and 8 per cent. Of the total ordinary capital, amounting to about 326½ million pounds at the end of last year, no less than 64 per cent. received dividend at rates varying from 4 to 8 per cent. Taking all the other descriptions of capital together, the gross amount at the close of 1889 was over 550,000,000*l.*, and of this about 518,000,000*l.* received between 3 and 5 per cent. The rates of dividend or interest borne by these descriptions of capital may to a large extent be considered as fixed, and

it would therefore seem scarcely necessary to institute a comparison between the amounts and the grouping shown above in regard to them with the corresponding particulars for 1888. It may, however, be interesting to place the figures for the ordinary capital for the two years side by side as indicating how much more prosperous a year 1889 was than 1888 to the railway shareholder.

Rates of Dividend.	1889.		1888.	
	Amount.	Per cent. of Total.	Amount.	Per cent. of Total.
	Million £		Million £	
Nil - - - - -	44·5	13·6	47·2	14·6
Not above 1 per cent. - - -	2·6	0·8	1·5	0·5
Above 1 and not over 2 per cent. - -	2·9	0·9	12·0	3·7
" 2 " 3 " - - -	37·4	11·4	28·0	8·7
" 3 " 4 " - - -	25·0	7·7	24·9	7·7
" 4 " 5 " - - -	55·6	17·0	60·7	18·8
" 5 " 6 " - - -	66·1	20·3	80·2	24·9
" 6 " 7 " - - -	20·7	6·3	62·0	19·3
" 7 " 8 " - - -	67·4	20·7	3·0	0·9
" 8 " 9 " - - -	3·5	1·1	—	—
Over 9 per cent. - - -	0·5	0·2	2·8	0·9
Total - - - - -	326·2	100·0	322·3	100·0

Summary.

It may be convenient if, in conclusion, we bring together in a summary statement the principal facts as to the results shown by the railway returns for last year to which we have called attention in the foregoing pages. The following table, which is in the usual form, is given with this object.

SUMMARY of the MILEAGE, CAPITAL, TRAFFIC RECEIPTS, WORKING EXPENSES, and NET EARNINGS of the RAILWAYS of the UNITED KINGDOM in 1888 and 1889 compared.

	1888.	1889.	Increase in 1889.		Decrease in 1889.	
			Amount.	Per cent.	Amount.	Per cent.
	Miles.	Miles.	Miles.			
Mileage - - - - -	19,812	19,943	131	0·7	—	—
Double or more mileage - - -	10,772	10,853	81	0·8	—	—
	£	£	£			
Capital - - - - -	864,695,963	876,595,166	11,899,203	1·4	—	—
Capital per mile open - - -	43,645	43,955	310	0·7	—	—
Ordinary capital - - - - -	322,338,446	326,229,558	3,891,112	1·2	—	—
Receipts :—						
Passenger - - - - -	30,984,090	32,630,724	1,646,634	5·3	—	—
Goods - - - - -	38,755,780	41,086,333	2,330,553	6·0	—	—
Miscellaneous - - - - -	3,154,795	3,307,960	153,165	4·9	—	—
Total - - - - -	72,894,665	77,025,017	4,130,352	5·7	—	—
Working Expenditure - - - - -	37,762,107	40,094,116	2,332,009	6·2	—	—
Net earnings - - - - -	35,132,558	36,930,901	1,798,343	5·1	—	—
Receipts per train-mile from passenger and goods traffic - -	d. 57·48	d. 58·37	d. 0·89	1·5	—	—
Expenditure per train-mile, exclusive of harbour, &c. expenses -	29·97	30·54	0·57	1·9	—	—
Net earnings per train-mile -	27·51	27·83	0·32	1·2	—	—
Per-centage of net earnings on capital - - - - -	4·06	4·21	0·15	3·7	—	—
Dividend paid on ordinary capital -	*4·22	*4·66	0·44	10·4	—	—

* These per-centages are calculated on amounts a little in excess of the true totals. See note to Table 3, Appendix.

This summary makes clear beyond doubt, that, as previously stated, 1889 was a more than ordinarily prosperous year for the railway companies. There was a moderate increase of total capital over the amount for 1888, only a proportional share of which went to increase the amount of ordinary capital. There was a large increase of revenue from all branches, which was not earned without some increase in the working expenses. The latter increase, however, was no more than in proportion to the increase in the receipts, and the net earnings were accordingly over 5 per cent. more last year than in 1888. Had wages and the prices of materials remained at the 1888 level, other things being the same as they have been, the net earnings would have been considerably larger than they were, and larger dividends would have been distributed than those to which we have been able to point; but the rise in prices of materials and the rise in wages are the natural accompaniments of good trade, and, taken as it stands, the improvement is satisfactory not only in itself but as showing an advance in the general business of the country.

The improvement in 1889 is apparently being continued during the present year; but on this it would be out of place to introduce any comment in the present report.

Board of Trade,
August 1890.

We have, &c.,
(Signed) R. GIFFEN,
COURTENAY BOYLE.

APPENDIX.

NOTE.—The Receipts from Miscellaneous Sources, and the Expenditure for Steamboats, Canals, Harbours, and Docks, are not included in any of the following Tables.

No. 1.—LENGTH OF RAILWAYS open for Traffic on the 31st December in each of the Years from 1879 to 1889.

	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.
In ENGLAND AND WALES	<i>Miles.</i> 12,547	<i>Miles.</i> 12,656	<i>Miles.</i> 12,807	<i>Miles.</i> 13,052	<i>Miles.</i> 13,215	<i>Miles.</i> 13,340	<i>Miles.</i> 13,612	<i>Miles.</i> 13,678	<i>Miles.</i> 13,825	<i>Miles.</i> 13,982	<i>Miles.</i> 14,034
„ SCOTLAND -	2,864	2,907	2,927	2,940	2,964	2,999	2,982	3,022	3,079	3,097	3,118
„ IRELAND - -	2,285	2,370	2,441	2,465	2,502	2,525	2,575	2,632	2,674	2,733	2,791
„ UNITED KINGDOM	17,696	17,933	18,175	18,457	18,681	18,864	19,169	19,332	19,578	19,812	19,943

No. 2.—AMOUNT of ORDINARY, GUARANTEED and PREFERENTIAL, and LOAN CAPITAL, and PROPORTION PER CENT. of each to the TOTAL CAPITAL of RAILWAY COMPANIES in the UNITED KINGDOM on 31st December in each of the Years from 1879 to 1889.

Year.	Ordinary.		Guaranteed and Preferential.		Loans and Debenture Stock.		Total.	
	Amount.	Proportion to Total Capital.	Amount.	Proportion to Total Capital.	Amount.	Proportion to Total Capital.	Amount.	Proportion to Total Capital.
	£	Per cent.	£	Per cent.	£	Per cent.	£	Per cent.
1879 - -	266,914,656	37	270,719,044	38	179,369,769	25	717,003,469	100
1880 - -	270,496,503	37	276,061,714	38	181,758,631	25	728,316,848	100
1881 - -	275,935,904	37	284,965,564	38	184,626,694	25	745,528,162	100
1882 - -	283,574,028	37	295,049,972	38	189,275,570	25	767,899,570	100
1883 - -	293,437,106	37	295,561,021	38	195,923,185	25	784,921,312	100
1884 - -	298,983,446	37	301,412,847	38	201,068,074	25	801,464,367	100
1885 - -	302,254,759	37	308,129,163	38	205,474,133	25	815,858,055	100
1886 - -	305,202,082	37	314,451,644	38	208,690,528	25	828,344,254	100
1887 - -	314,795,317	37	318,824,385	38	212,351,952	25	845,971,654	100
1888 - -	322,338,446	37	323,504,819	38	218,852,698	25	864,695,963	100
1889 - -	326,229,558	37	327,446,627	37	222,918,981	26	876,595,166	100

No. 3.—AMOUNT and AVERAGE RATE of DIVIDEND on each DESCRIPTION OF CAPITAL in each of the Years from 1879 to 1889.

Year.	Ordinary Capital.		Guaranteed and Preferential Capital.		Loans and Debenture Stock.		Total.	
	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.	Amount.	Rate.
	£		£		£		£	
1879 -	10,722,270	4·02	11,632,790	4·30	7,544,300	4·21	29,899,360	4·17
1880 -	12,766,640	4·72	12,020,075	4·35	7,678,171	4·22	32,464,886	4·46
1881 -	12,848,113	4·66	12,224,578	4·29	7,782,741	4·22	32,855,432	4·41
1882 -	13,424,340	4·73	12,624,758	4·28	7,974,925	4·21	34,024,023	4·43
1883 -	13,725,933	4·68	12,601,797	4·26	8,254,643	4·21	34,582,373	4·41
1884 -	12,982,094	4·34	12,785,282	4·24	8,473,692	4·21	34,241,068	4·27
1885 -	12,222,828	4·04	12,846,963	4·17	8,598,446	4·18	33,668,237	4·13
1886 -	12,039,316	3·94	13,025,944	4·14	8,727,906	4·18	33,793,166	4·08
1887 -	12,832,775	4·08	13,199,786	4·14	8,871,896	4·18	34,904,457	4·13
1888 -	13,615,997	4·22	13,320,992	4·12	9,091,770	4·15	36,028,759	4·17
1889 -	15,209,927	4·66	13,484,048	4·12	9,158,733	4·11	37,852,708	4·32

NOTE.—The amounts in the above table are slightly in excess of the true totals, as some companies have invested a small portion of their capital in the stocks and shares of other companies.

No. 4.—STATEMENT SHOWING THE VARIOUS RATES OF INTEREST OR DIVIDEND PAID ON CAPITAL
IN 1889, AND THE AMOUNTS ON WHICH EACH RATE WAS PAID.

Ordinary Capital.				Guaranteed Capital.		Preference Capital.		Loans.		Debenture Stock.			
Rate of Dividend.	Amount at each Rate.	Rate of Dividend.	Amount at each Rate.	Rate of Dividend.	Amount at each Rate.	Rate of Dividend.	Amount at each Rate.	Rate of Interest.	Amount at each Rate.	Rate of Interest.	Amount at each Rate.		
Per cent.	£	Per cent.	£	Per cent.	£	Per cent.	£	Per cent.	£	Per cent.	£		
*Nil.	1,812,132	(continued.)		*Nil.	24,720	*Nil.	360,630	3	381,818	$\frac{1}{2}$	50,000		
*3 $\frac{1}{2}$	214,252	4 $\frac{1}{2}$	70,000	*4	284,922	*4	2,392,751	3 $\frac{1}{2}$	888,729	$\frac{13}{20}$	367,365		
*4	4,404,749	4 $\frac{1}{4}$	2,717,000	*5	35,000	Nil.	12,217,178†	3 $\frac{1}{2}$	1,272,160	1 $\frac{1}{2}$	131,901		
*5	24,247	4 $\frac{9}{20}$	75,000	Nil.	36,200‡	$\frac{3}{20}$	75,000	3 $\frac{1}{2}$	298,065	2 $\frac{1}{2}$	250,000		
Nil.	42,675,303	4 $\frac{1}{2}$	24,048,175	$\frac{13}{20}$	16,500	$\frac{1}{2}$	200,000	3 $\frac{1}{2}$	100	3	6,830,062		
$\frac{1}{2}$	17,230	4 $\frac{3}{4}$	37,321	2	101,180	$\frac{1}{2}$	25,000	4	3,899,585	3 $\frac{1}{4}$	147,000		
$\frac{7}{8}$	200,000	4 $\frac{7}{8}$	13,947,517	3 $\frac{1}{2}$	555,980	1	70,000	4 $\frac{1}{2}$	155,811	3 $\frac{1}{2}$	2,316,441		
$\frac{3}{4}$	2,106,300	5	13,643,159	4	54,253,481	1 $\frac{3}{8}$	44,150	4 $\frac{3}{8}$	60,200	4	152,296,347		
$\frac{7}{8}$	80,000	5 $\frac{1}{8}$	10,860,327	4 $\frac{1}{2}$	1,797,428	1 $\frac{3}{8}$	11,070	4 $\frac{1}{2}$	619,041	4 $\frac{1}{4}$	6,371,318		
$\frac{13}{16}$	15,000	5 $\frac{1}{2}$	1,547,583	4 $\frac{3}{4}$	4,167,665	1 $\frac{7}{8}$	98,000	5	1,837,344	4 $\frac{3}{8}$	10,000		
1	221,657	5 $\frac{3}{8}$	383,025	4 $\frac{3}{4}$	40,000	2	62,770	5 $\frac{1}{2}$	9,000	4 $\frac{1}{2}$	28,151,050		
1 $\frac{1}{8}$	302,431	5 $\frac{7}{8}$	35,000	4 $\frac{7}{8}$	10,000	2 $\frac{1}{4}$	246,950	6	176,058	5	14,902,374		
1 $\frac{1}{4}$	111,650	5 $\frac{1}{2}$	758,964	5	32,541,859	2 $\frac{1}{2}$	894,049	8	5,800	6	1,486,012		
1 $\frac{1}{2}$	44,120	5 $\frac{3}{4}$	259,000	5 $\frac{1}{2}$	800,000	2 $\frac{3}{4}$	236,404			8	5,400		
1 $\frac{7}{8}$	208,410	5 $\frac{7}{8}$	189,950	5 $\frac{3}{4}$	180,000	3 $\frac{1}{4}$	451,698	£	9,603,711				
1 $\frac{3}{4}$	1,725,318	5 $\frac{15}{16}$	266,675	5 $\frac{1}{2}$	40,000	3 $\frac{1}{2}$	1,255,691			£	218,315,270		
1 $\frac{1}{2}$	382,879	6	51,842,367	6	3,099,580	3 $\frac{3}{8}$	305,000	Average rate of Interest on Loans, 4·09 per cent.		Average rate of Interest on Debenture Stock, 4·11 per cent.			
1 $\frac{7}{8}$	77,695	6 $\frac{1}{4}$	149,572	8 $\frac{1}{2}$	2,000	3 $\frac{7}{8}$	6,329,974						
2	82,796	6 $\frac{1}{2}$	45,000	10	50,000	4	148,084,367						
2 $\frac{1}{8}$	75,000	6 $\frac{3}{4}$	20,310,000			4 $\frac{1}{2}$	134,050						
2 $\frac{6}{17}$	17,000	7	140,890	£	98,036,515	4 $\frac{1}{2}$	14,238,634						
2 $\frac{1}{2}$	2,729,915	7 $\frac{1}{8}$	2,731,155			4 $\frac{5}{8}$	100,000						
2 $\frac{5}{8}$	8,270,613	7 $\frac{1}{4}$	24,070,886			4 $\frac{11}{16}$	806,347						
2 $\frac{3}{4}$	13,434,390	7 $\frac{3}{8}$	38,047,673			4 $\frac{3}{4}$	15,000						
2 $\frac{7}{8}$	6,676,830	7 $\frac{1}{2}$	2,033,400			4 $\frac{9}{16}$	14,640						
3	6,193,424	8	480,538			4 $\frac{11}{16}$	45,000						
3 $\frac{1}{4}$	299,700	8 $\frac{1}{8}$	775,800			5	37,223,115	Average rate of Interest on Loans and Debenture Stock, 4·11 per cent.					
3 $\frac{1}{8}$	1,279,953	8 $\frac{3}{10}$	60,000			5 $\frac{1}{2}$	612,150						
3 $\frac{1}{2}$	1,569,080	8 $\frac{1}{4}$	2,448,710			6	2,681,954						
3 $\frac{1}{4}$	436,143	9	225,000			8	13,540						
3 $\frac{3}{4}$	4,349,255	9 $\frac{1}{2}$	350,000			12 $\frac{1}{2}$	165,000						
4	12,443,865	12 $\frac{1}{2}$	179,534			£	229,410,112						
4 $\frac{1}{2}$	1,014,000												
(continued.)		£	326,229,558										
Average rate of Dividend on Ordinary Capital, 4·66 per cent.				Average rate of Dividend on Guaranteed and Preference Capital, 4·12 per cent.									

No. 5.—TOTAL RAILWAY RECEIPTS and EXPENDITURE, and NET RECEIPTS from RAILWAY WORKING, and PER-CENTAGE PROPORTION of EXPENSES to RECEIPTS, and of NET RECEIPTS to TOTAL SHARE and LOAN CAPITAL, in each of the Years from 1879 to 1889.

Year.	Total Traffic Receipts.	Total Railway Working Expenditure.		Net Receipts from Railway Working.	
		Amount.	Proportion per cent. to Total Traffic Receipts.	Amount.	Proportion per cent. to Total Share and Loan Capital.

ENGLAND AND WALES.

	£	£		£	
1879 - - -	50,437,796	26,216,046	52·0	24,221,750	4·08
1880 - - -	53,598,987	27,565,783	51·4	26,033,199	4·32
1881* - - -	<i>54,924,812</i>	<i>28,577,282</i>	<i>52·0</i>	<i>26,347,530</i>	<i>4·27</i>
1882 - - -	56,596,217	29,747,529	52·6	26,848,688	4·23
1883 - - -	57,978,298	30,579,370	52·7	27,398,928	4·21
1884 - - -	57,557,207	30,514,162	53·0	27,043,045	4·07
1885 - - -	56,700,406	30,198,294	53·3	26,502,112	3·91
1886 - - -	56,589,183	29,895,180	52·8	26,694,003	3·88
1887 - - -	57,769,493	30,444,931	52·7	27,324,562	3·89
1888 - - -	59,160,986	31,074,571	52·5	28,086,415	3·93
1889 - - -	62,691,817	32,972,045	52·6	29,719,772	4·11

SCOTLAND.

1879 - - -	6,384,551	3,369,928	52·8	3,014,623	3·32
1880 - - -	6,700,161	3,483,650	52·0	3,216,511	3·48
1881 - - -	6,966,711	3,650,240	52·4	3,316,471	3·50
1882 - - -	7,168,326	3,620,128	50·5	3,548,198	3·63
1883 - - -	7,416,046	3,900,728	52·6	3,515,318	3·57
1884 - - -	7,357,760	3,831,413	52·1	3,526,347	3·50
1885 - - -	7,185,784	3,688,247	51·3	3,497,537	3·39
1886 - - -	7,273,511	3,699,386	50·9	3,574,125	3·42
1887 - - -	7,358,764	3,705,314	50·4	3,653,450	3·42
1888 - - -	7,727,822	3,779,036	48·9	3,948,786	3·46
1889 - - -	8,032,640	3,962,516	49·3	4,070,124	3·51

IRELAND.

1879 - - -	2,572,935	1,464,549	56·9	1,108,386	3·34
1880 - - -	2,662,619	1,447,853	54·4	1,214,766	3·60
1881 - - -	2,601,477	1,473,478	56·6	1,127,999	3·29
1882 - - -	2,772,585	1,532,114	55·3	1,240,471	3·55
1883 - - -	2,815,708	1,563,508	55·5	1,252,200	3·53
1884 - - -	2,786,075	1,566,207	56·2	1,219,868	3·41
1885 - - -	2,758,777	1,540,992	55·9	1,217,785	3·42
1886 - - -	2,752,683	1,515,906	55·1	1,236,777	3·44
1887 - - -	2,786,329	1,515,426	54·4	1,270,903	3·49
1888 - - -	2,851,062	1,513,681	53·1	1,337,381	3·66
1889 - - -	2,992,600	1,640,795	54·8	1,351,805	3·65

UNITED KINGDOM.

1879 - - -	59,395,282	31,050,523	52·3	28,344,759	3·95
1880 - - -	62,961,767	32,497,291	51·6	30,464,476	4·18
1881* - - -	<i>64,493,000</i>	<i>33,704,000</i>	<i>52·3</i>	<i>30,792,000</i>	<i>4·13</i>
1882 - - -	66,537,128	34,899,771	52·5	31,637,357	4·12
1883 - - -	68,210,052	36,043,606	52·8	32,166,446	4·10
1884 - - -	67,701,042	35,911,782	53·0	31,789,260	3·97
1885 - - -	66,644,967	35,427,533	53·2	31,217,434	3·83
1886 - - -	66,615,377	35,110,472	52·7	31,504,905	3·80
1887 - - -	67,914,586	35,665,671	52·5	32,248,915	3·81
1888 - - -	69,739,870	36,367,288	52·1	33,372,582	3·86
1889 - - -	73,717,057	38,575,356	52·3	35,141,701	4·01

* The Great Western Railway Company having changed the date to which its accounts were made up, the Returns of the Company published in the Parliamentary Paper C.—3279 of Session 1882 were for 11 months only. But the Company having obligingly supplied the Board of Trade with the necessary information, the totals for the year 1881 in this Report include approximately 12 months' working of the Great Western Railway. The amended figures are printed in *italics*.

No. 6.—AMOUNT of RECEIPTS from PASSENGER and GOODS TRAFFIC, and the GROSS TRAFFIC RECEIPTS of RAILWAY COMPANIES in the UNITED KINGDOM in each Year from 1858 to 1889; showing also the AMOUNT of the INCREASE, and the RATE of INCREASE per cent., of each Year over the previous Year.

Year.	Passenger Traffic.			Goods Traffic.			Gross Receipts from Traffic.		
	Receipts.	Annual Increase.		Receipts.	Annual Increase.		Receipts.	Annual Increase.	
		Amount.	Per cent.		Amount.	Per cent.		Amount.	Per cent.
	£	£		£	£		£	£	
1858	11,697,906			12,258,845			23,956,751		
1859	12,537,493	839,587	7·18	13,206,009	947,164	7·73	25,743,502	1,786,751	7·46
1860	13,085,756	548,263	4·37	14,680,866	1,474,857	11·17	27,766,622	2,023,120	7·86
1861	13,326,475	240,719	1·84	15,238,880	558,014	3·80	28,565,355	798,733	2·88
1862	13,911,985	585,510	4·39	15,216,573	†22,307	†0·15	29,128,558	563,203	1·97
1863	14,521,528	609,543	4·38	16,634,869	1,418,296	9·32	31,156,397	2,027,839	6·96
1864	15,684,040	1,162,512	8·01	18,331,524	1,696,655	10·20	34,015,564	2,859,167	9·18
1865	16,572,051	888,011	5·66	19,318,062	986,538	5·38	35,890,113	1,874,549	5·51
1866	17,395,925	823,874	4·97	20,768,429	1,450,367	7·51	38,164,354	2,274,241	6·34
1867	17,935,634	539,709	3·10	21,544,365	775,936	3·74	39,479,999	1,315,645	3·45
*1868	—	—	—	—	—	—	—	—	—
1869	18,811,504	†875,870	†4·88	22,263,817	†719,452	†3·34	41,075,321	†1,595,322	†4·04
1870	19,301,911	490,407	2·61	24,115,159	1,851,342	8·32	43,417,070	2,341,749	5·70
1871	20,622,580	1,320,669	6·84	26,484,978	2,369,819	9·83	47,107,558	3,690,488	8·50
1872	22,287,555	1,664,975	8·07	29,016,559	2,531,581	9·56	51,304,114	4,196,556	8·91
1873	23,853,892	1,566,337	7·03	31,821,529	2,804,970	9·67	55,675,421	4,371,307	8·52
1874	24,893,615	1,039,723	4·36	32,005,883	184,354	0·58	56,899,498	1,224,077	2·20
1875	25,714,681	821,066	3·30	33,268,072	1,262,189	3·94	58,982,753	2,083,255	3·66
1876	26,163,551	448,870	1·75	33,754,317	486,245	1·46	59,917,868	935,115	1·59
1877	26,534,110	370,559	1·42	34,109,947	355,630	1·05	60,644,057	726,189	1·21
1878	26,889,614	355,504	1·34	33,564,761	†545,186	†1·60	60,454,375	†189,682	†0·31
1879	25,915,585	†974,029	†3·62	33,479,697	†85,064	†0·25	59,395,282	†1,059,093	†1·73
1880	27,200,464	1,284,879	4·96	35,761,303	2,281,606	6·81	62,961,767	3,566,485	6·00
1881	27,692,000	491,536	1·81	36,801,000	1,039,697	2·91	64,493,000	1,531,233	2·43
1882	28,796,813	1,104,813	3·99	37,740,315	939,315	2·55	66,537,128	2,044,128	3·17
1883	29,508,733	711,920	2·47	38,701,319	961,004	2·55	68,210,052	1,672,924	2·51
1884	30,030,450	521,717	1·77	37,670,592	†1,030,727	†2·66	67,701,042	†509,010	†0·75
1885	29,773,022	†257,428	†0·86	36,871,945	†798,647	†2·12	66,644,967	†1,056,075	†1·56
1886	30,244,938	471,916	1·59	36,370,439	†501,506	†1·36	66,615,377	†29,590	†0·04
1887	30,573,287	328,349	1·09	37,341,299	970,860	2·67	67,914,586	1,299,209	1·95
1888	30,984,090	410,803	1·34	38,755,780	1,414,481	3·79	69,739,870	1,825,284	2·69
1889	32,630,724	1,646,634	5·31	41,086,333	2,330,553	6·01	73,717,057	3,977,187	5·70

* Cannot be given for this year, several companies having omitted to make the necessary Returns.

† Increase of 1869 over 1867.

‡ Decrease.

|| See note, page 16.

No. 7.—COMPARISON OF RECEIPTS.

I.—From PASSENGER TRAINS in each of the YEARS from 1879 to 1889.

YEAR.	Receipts from Passenger Trains.						TOTAL.
	Receipts from Passengers.					Excess Luggage, Parcels, Carriages, Horses, Dogs, and Mails.	
	1st Class.	2nd Class.	3rd Class and Parlia- mentary.	Holders of Season or Periodical Tickets.	TOTAL.		
ENGLAND AND WALES.							
	£	£	£	£	£	£	£
1879	3,219,481	2,997,906	11,921,446	1,198,228	*19,340,520	2,726,397	*22,072,299
1880	3,250,190	3,060,505	12,750,035	1,280,366	20,341,096	2,794,753	*23,141,055
1881†	3,138,922	2,977,943	13,232,585	1,340,089	20,689,539	2,856,871	23,576,410
1882	3,088,176	2,953,525	14,108,559	1,422,632	21,572,892	2,954,900	24,527,792
1883	2,998,905	2,859,017	14,702,697	1,498,554	22,059,173	3,045,708	25,104,881
1884	2,833,677	2,642,329	15,206,778	1,564,311	22,247,095	3,337,101	25,584,196
1885	2,646,041	2,493,521	15,211,691	1,617,192	21,968,445	3,414,250	25,382,695
1886	2,600,628	2,419,683	15,585,808	1,682,158	22,288,277	3,482,959	25,771,236
1887	2,541,431	2,399,960	15,785,424	1,744,207	22,471,022	3,605,742	26,076,764
1888	2,488,509	2,316,466	16,004,935	1,813,022	22,622,932	3,651,456	26,274,388
1889	2,635,937	2,339,982	16,998,718	1,942,850	23,917,487	3,856,797	27,774,284

SCOTLAND.

1879	436,261	175,476	1,369,657	119,567	2,100,961	382,067	2,483,028
1880	461,710	172,392	1,443,376	128,586	2,206,064	411,153	2,617,217
1881	455,036	167,214	1,511,612	132,917	2,266,779	423,527	2,690,306
1882	454,048	152,223	1,588,392	139,594	2,334,257	447,196	2,781,453
1883	450,010	147,085	1,661,281	146,038	2,404,414	480,763	2,885,177
1884	434,079	139,550	1,715,577	151,153	2,440,359	491,378	2,931,737
1885	399,579	122,873	1,697,283	155,663	2,375,398	504,982	2,880,380
1886	388,573	100,457	1,803,011	171,072	2,463,113	528,051	2,991,164
1887	374,001	78,971	1,815,462	178,362	2,446,796	543,468	2,990,264
1888	384,798	65,509	1,962,538	184,999	2,597,844	565,351	3,163,195
1889	380,290	46,503	2,026,624	197,528	2,650,945	593,654	3,244,599

IRELAND.

1879	231,942	285,482	577,787	46,491	*1,141,712	218,546	1,360,258
1880	232,133	297,494	637,550	47,322	1,214,499	227,693	1,442,192
1881	210,042	299,843	632,803	47,994	1,190,682	234,602	1,425,284
1882	211,004	311,604	683,520	47,259	1,253,387	234,181	1,487,568
1883	221,138	323,642	686,086	47,999	1,278,865	239,810	1,518,675
1884	213,261	323,129	683,685	48,027	1,268,102	246,415	1,514,517
1885	197,350	314,717	679,756	49,669	1,241,492	268,455	1,509,947
1886	172,765	303,474	679,564	48,898	1,204,701	277,837	1,482,538
1887	166,076	309,872	692,158	50,430	1,218,536	287,723	1,506,259
1888	166,974	310,431	722,761	52,991	1,253,157	293,350	1,546,507
1889	171,300	318,249	760,102	55,590	1,305,241	306,600	1,611,841

UNITED KINGDOM.

1879	3,887,684	3,458,864	13,868,890	1,364,286	*22,582,193	3,327,010	*25,915,585
1880	3,944,033	3,580,391	14,830,961	1,456,274	23,761,659	3,433,599	*27,200,464
1881†	3,804,000	3,443,000	15,377,000	1,521,000	24,147,000	3,545,000	27,692,000
1882	3,753,228	3,417,352	16,380,471	1,609,485	25,160,536	3,636,277	28,796,813
1883	3,670,053	3,329,744	17,050,064	1,692,591	25,742,452	3,766,281	29,508,733
1884	3,481,017	3,105,008	17,606,040	1,763,491	25,955,556	4,074,894	30,030,450
1885	3,242,970	2,931,111	17,588,730	1,822,524	25,585,335	4,187,687	29,773,022
1886	3,161,966	2,823,614	18,068,383	1,902,128	25,956,091	4,288,847	30,244,938
1887	3,081,508	2,788,803	18,293,044	1,972,999	26,136,354	4,436,933	30,573,287
1888	3,040,281	2,692,406	18,690,234	2,051,012	26,473,933	4,510,157	30,984,090
1889	3,187,527	2,704,734	19,785,444	2,195,968	27,873,673	4,757,051	32,630,724

* Including receipts not classified.

† See note, page 16.

No. 7.—COMPARISON OF RECEIPTS—*continued*.

II.—From GOODS TRAINS, and PROPORTION of RECEIPTS from PASSENGER and GOODS TRAINS, in each of the Years from 1879 to 1889.

YEAR.	Receipts from Goods, &c. Trains.				TOTAL from Passenger and Goods, &c. Trains.	Proportion of Receipts from Passenger and Goods Trains.	
	Minerals.	General Merchandise.	Live Stock.	TOTAL Goods, &c. Trains.		Passenger.	Goods, &c.

ENGLAND AND WALES.							
	£	£	£	£	£	Per cent.	Per cent.
1879	11,770,602	15,809,006	785,889	28,365,497	50,437,796	44	56
1880	12,734,376	16,923,532	800,024	30,457,932	53,598,987	43	57
1881†	13,288,342	17,317,014	742,340	31,347,696	54,924,106	43	57
1882	13,490,812	17,728,073	849,540	32,068,425	56,596,217	43	57
1883	14,057,188	18,028,587	787,642	32,873,417	57,978,298	43	57
1884	13,398,433	17,750,107	824,471	31,973,011	57,557,207	44	56
1885	13,169,551	17,312,933	834,489	*31,317,711	56,700,406	45	55
1886	12,990,568	16,943,646	882,617	*30,817,947	56,589,188	46	54
1887	13,572,625	17,250,668	867,998	*31,692,729	57,769,493	45	55
1888	13,995,263	18,001,156	890,179	32,886,598	59,160,986	44	56
1889	14,791,828	19,245,723	879,982	34,917,533	62,691,817	44	56

SCOTLAND.

	£	£	£	£	£	Per cent.	Per cent.
1879	1,756,548	1,973,420	163,285	*3,901,523	6,384,551	39	61
1880	1,823,913	2,077,400	171,732	*4,082,944	6,700,161	39	61
1881	1,959,398	2,133,532	171,181	*4,276,405	6,966,711	39	61
1882	1,986,088	2,195,669	190,872	*4,386,873	7,168,326	39	61
1883	2,062,223	2,267,685	175,996	*4,530,869	7,416,046	39	61
1884	2,001,690	2,212,556	187,589	*4,426,023	7,357,760	40	60
1885	1,955,861	2,162,288	187,255	4,305,404	7,185,784	40	60
1886	1,915,286	2,171,897	195,164	4,282,347	7,273,511	41	59
1887	1,946,349	2,228,040	194,111	4,368,500	7,358,764	41	59
1888	2,034,383	2,327,282	202,962	4,564,627	7,727,822	41	59
1889	2,116,465	2,464,452	207,124	4,788,041	8,032,640	40	60

IRELAND.

	£	£	£	£	£	Per cent.	Per cent.
1879	128,162	891,337	193,178	1,212,677	2,572,935	53	47
1880	120,937	900,809	198,681	1,220,427	2,662,619	54	46
1881	118,260	867,454	190,479	1,176,193	2,601,477	55	45
1882	129,525	912,997	242,495	1,285,017	2,772,585	54	46
1883	136,010	952,215	208,808	1,297,033	2,815,708	54	46
1884	128,533	917,305	225,720	1,271,558	2,786,075	54	46
1885	120,818	906,943	221,069	1,248,830	2,758,777	55	45
1886	121,574	906,866	241,705	1,270,145	2,752,683	54	46
1887	126,235	922,460	231,375	1,280,070	2,786,329	54	46
1888	129,235	911,403	263,917	1,304,555	2,851,062	54	46
1889	143,874	984,183	252,702	1,380,759	2,992,600	54	46

UNITED KINGDOM.

	£	£	£	£	£	Per cent.	Per cent.
1879	13,655,312	18,673,763	1,142,352	*33,479,697	59,395,282	44	56
1880	14,679,226	19,901,741	1,170,437	*35,761,303	62,961,767	43	57
1881†	15,366,000	20,318,000	1,104,000	*36,800,294	64,492,294	43	57
1882	15,606,425	20,836,739	1,282,907	*37,740,315	66,537,128	43	57
1883	16,255,421	21,248,487	1,172,446	*38,701,319	68,210,052	43	57
1884	15,528,656	20,879,968	1,237,780	*37,670,592	67,701,042	44	56
1885	15,246,230	20,382,164	1,242,813	*36,871,945	66,644,967	45	55
1886	15,027,428	20,022,409	1,319,486	*36,370,439	66,615,377	45	55
1887	15,645,209	20,401,168	1,293,484	*37,341,299	67,914,586	45	55
1888	16,158,881	21,239,841	1,357,058	38,755,780	69,739,870	44	56
1889	17,052,167	22,694,358	1,339,808	41,086,333	73,717,057	44	56

* Including receipts not classified.

† See note, page 16.

No. 8.—COMPARISON of RECEIPTS per Mile of Railway open from Passenger Trains, in each of the Years from 1879 to 1889.

Year.	1st Class.	2nd Class.	3rd Class and Parlia- mentary.	Season Ticket Holders.	TOTAL.	Excess Luggage, Parcels, Carriages, Horses, and Dogs.	Mails.	TOTAL Receipts from Passenger Trains.
ENGLAND AND WALES.								
	£	£	£	£	£	£	£	£
1879 - - -	257	239	950	96	1,542	180	37	1,759
1880 - - -	257	242	1,007	101	1,607	184	37	1,828
1881* - - -	245	233	1,033	105	1,616	188	37	1,841
1882 - - -	237	226	1,081	109	1,653	190	36	1,879
1883 - - -	227	216	1,113	113	1,669	194	37	1,900
1884 - - -	212	198	1,140	117	1,667	211	40	1,918
1885 - - -	194	183	1,118	119	1,614	211	40	1,865
1886 - - -	190	177	1,139	123	1,629	214	41	1,884
1887 - - -	184	173	1,142	126	1,625	220	41	1,886
1888 - - -	178	166	1,145	129	1,618	221	40	1,879
1889 - - -	188	167	1,211	138	1,704	234	41	1,979

SCOTLAND.

	£	£	£	£	£	£	£	£
1879 - - -	152	61	478	42	733	91	43	867
1880 - - -	159	59	497	44	759	99	42	900
1881 - - -	156	57	516	45	774	100	45	919
1882 - - -	154	52	540	48	794	106	46	946
1883 - - -	152	50	560	49	811	113	49	973
1884 - - -	145	47	572	50	814	117	47	978
1885 - - -	134	41	569	52	796	119	51	966
1886 - - -	129	33	597	56	815	119	56	990
1887 - - -	121	26	590	58	795	121	55	971
1888 - - -	124	21	634	60	839	124	58	1,021
1889 - - -	122	15	650	63	850	131	60	1,041

IRELAND.

	£	£	£	£	£	£	£	£
1879 - - -	102	125	253	20	500	47	48	595
1880 - - -	98	125	269	20	512	50	46	608
1881 - - -	86	123	259	20	488	50	46	584
1882 - - -	86	126	277	19	508	49	46	603
1883 - - -	89	129	274	19	511	51	45	607
1884 - - -	84	128	271	19	502	52	46	600
1885 - - -	77	122	264	19	482	53	51	586
1886 - - -	66	115	258	19	458	51	54	563
1887 - - -	62	116	259	19	456	53	54	563
1888 - - -	61	114	264	19	458	54	54	566
1889 - - -	62	114	272	20	468	57	53	578

UNITED KINGDOM.

	£	£	£	£	£	£	£	£
1879 - - -	220	196	784	77	1,277	148	39	1,464
1880 - - -	220	197	827	81	1,325	152	39	1,516
1881* - - -	209	190	846	84	1,329	156	39	1,524
1882 - - -	203	185	888	87	1,363	158	39	1,560
1883 - - -	196	178	913	91	1,378	162	40	1,580
1884 - - -	185	165	933	93	1,376	174	42	1,592
1885 - - -	169	153	918	95	1,335	175	43	1,553
1886 - - -	164	146	935	98	1,343	177	45	1,565
1887 - - -	157	143	934	101	1,335	182	45	1,562
1888 - - -	153	136	943	104	1,336	183	45	1,564
1889 - - -	160	136	992	110	1,398	193	45	1,636

* See note, page 16.

No. 9.--COMPARISON OF NUMBERS OF PASSENGER-JOURNEYS, NUMBER OF SEASON TICKET HOLDERS and TONNAGE of GOODS and MINERALS conveyed, in each of the Years from 1879 to 1889.

Year.	PASSENGERS.					Minerals.	General Merchandise.			
	1st Class.	2nd Class.	3rd Class and Parliamentary.	TOTAL.	Holders of Season or Periodical Tickets.					
ENGLAND AND WALES.										
1879	-	-	-	32,591,182	56,451,043	414,610,562	503,652,787	†397,063	Tons. 126,083,259	Tons. 53,593,428
1880	-	-	-	32,097,645	57,894,129	450,677,401	540,669,175	†449,823	140,965,335	59,427,522
1881†	-	-	-	31,576,040	57,902,304	471,696,977	561,175,291	†487,856	149,019,777	60,513,093
1882	-	-	-	30,777,736	58,787,900	497,124,194	586,689,830	†540,811	153,848,044	63,646,968
1883	-	-	-	29,897,866	59,083,508	523,420,384	612,401,758	†570,686	160,522,029	65,387,354
1884	-	-	-	28,233,996	55,315,478	537,581,714	621,131,188	†697,678	155,432,872	64,542,283
1885	-	-	-	26,437,116	54,400,083	541,332,745	622,169,944	†860,342	156,220,110	62,527,984
1886	-	-	-	25,942,264	54,363,466	561,196,303	641,502,033	†932,673	154,725,763	61,569,049
									*17,185	
1887	-	-	-	25,260,910	58,005,233	564,508,813	647,774,956	†990,815	164,934,563	64,117,915
1888	-	-	-	24,267,049	57,443,882	573,461,987	654,172,918	†1,056,160	171,433,249	67,849,678
1889	-	-	-	24,300,309	57,459,343	601,503,922	683,263,574	†1,158,234	179,996,664	72,470,473
									*11,984	

SCOTLAND.

1879	4,785,893	3,171,505	34,770,308	42,677,706	23,139	22,161,743	6,713,368
1880	4,980,354	3,225,779	37,750,700	45,956,833	30,765	23,704,436	7,611,503
1881	4,879,114	3,075,456	39,256,879	47,211,449	32,987	25,963,501	7,975,971
1882	4,786,866	2,898,189	41,739,922	49,424,477	35,468	26,414,452	8,368,513
1883	4,790,982	2,835,687	44,404,858	52,031,527	37,924	27,767,095	8,692,433
1884	4,711,500	2,715,932	46,877,642	54,305,074	47,354	27,063,389	8,463,532
1885	4,489,702	2,476,842	48,955,881	55,922,425	†42,375	26,533,827	8,279,017
1886	5,003,892	2,288,304	58,069,896	65,362,092	44,534	26,246,665	8,422,724
1887	4,695,255	1,930,158	59,807,204	66,432,617	51,579	27,308,278	8,794,242
1888	4,626,971	1,643,992	62,142,386	68,413,349	†96,353	29,080,119	9,610,911
1889	4,379,855	834,640	65,692,969	70,907,464	87,087	30,626,514	10,236,519

IRELAND.

1879	1,640,099	3,808,296	10,954,002	16,402,397	21,640	1,047,273	2,589,084
1880	1,689,927	3,914,962	11,654,128	17,259,017	21,586	1,000,033	2,596,300
1881	1,675,876	4,021,240	11,946,144	17,643,260	22,157	1,050,722	2,521,936
1882	1,640,467	4,009,728	13,073,793	18,723,988	23,289	1,148,015	2,689,841
1883	1,699,029	4,177,589	13,408,234	19,284,852	23,440	1,196,488	2,817,569
1884	1,637,043	4,233,810	13,684,745	19,555,598	21,659	1,119,295	2,706,515
1885	1,538,324	4,108,847	13,473,491	19,120,662	21,825	1,022,808	2,704,708
1886	1,384,682	4,034,715	13,300,868	18,720,265	22,479	968,969	2,676,288
1887	1,367,624	4,203,965	13,899,369	19,470,958	23,695	1,012,359	2,759,527
1888	1,367,697	4,216,045	14,329,155	19,912,897	24,396	1,063,248	2,711,234
1889	1,394,646	4,393,944	15,223,445	21,012,035	25,891	1,179,383	2,984,960

UNITED KINGDOM.

1879	38,967,174	63,430,844	460,334,872	562,732,890	†446,842	149,292,275	62,895,880
1880	38,767,926	65,034,870	500,082,229	603,885,025	†502,174	165,670,304	69,635,325
1881†	38,131,000	64,999,000	522,900,000	626,030,000	†543,000	176,034,000	71,011,000
1882	37,204,569	65,695,817	551,937,909	654,838,295	†599,568	181,410,511	74,705,322
1883	36,387,877	66,096,784	581,233,476	683,718,137	†632,050	189,485,612	76,897,356
1884	34,582,539	62,265,220	598,144,101	694,991,860	†766,691	183,615,556	75,712,330
1885	32,465,142	60,985,772	603,762,117	697,213,031	†924,542	183,776,745	73,511,709
1886	32,330,838	60,686,485	632,567,067	725,584,390	†999,686	181,941,397	72,668,061
1887	31,323,789	64,139,356	638,215,386	733,678,531	†1,066,089	*17,185 193,255,200	75,671,684
1888	30,261,717	63,303,919	648,933,528	742,499,164	†1,176,909	201,576,616	80,171,823
1889	30,074,810	62,687,927	682,420,336	775,183,073	†1,271,212	211,802,561	*11,984 85,691,952

* Not classified.

† Including workmen's weekly tickets.

‡ See note, page 16.

§ Corrected figures.

No. 10.—COMPARISON of NUMBER of MILES TRAVELLED by PASSENGER, GOODS, and MIXED TRAINS in each of the Years from 1879 to 1889.

Year.	Miles travelled.			
	By Passenger Trains.	By Goods Trains.	By Mixed Trains.	Total.

ENGLAND AND WALES.				
1879	96,704,423	90,839,210	680,709	188,224,342
1880	103,468,368	97,893,755	688,768	202,050,891
1881	106,667,874	101,177,736	671,939	208,517,549
1882	112,234,863	104,588,557	569,595	217,393,015
1883	117,406,242	108,446,732	498,415	226,351,389
1884	121,582,978	106,605,484	784,097	228,972,559
1885	124,132,488	106,022,908	431,712	230,587,108
1886	125,259,057	105,880,810	482,788	231,622,655
1887	127,658,994	108,368,230	467,875	236,495,099
1888	130,392,602	112,331,601	484,843	243,209,046
1889	135,523,228	117,796,137	506,821	253,826,186

SCOTLAND.				
1879	12,024,947	13,695,029	1,420,452	27,140,428
1880	12,277,534	14,200,981	1,442,965	27,921,480
1881	12,474,403	14,694,859	1,517,683	28,686,945
1882	12,545,361	14,985,492	1,511,002	29,041,855
1883	13,243,827	15,933,687	1,632,851	30,810,315
1884	13,955,677	16,245,044	1,770,154	31,970,875
1885	14,313,018	16,039,715	1,673,400	32,026,133
1886	15,457,261	15,964,790	1,682,596	33,104,647
1887	16,033,316	16,135,764	1,681,746	33,850,826
1888	16,783,587	16,564,728	1,714,208	35,062,523
1889	17,153,786	17,068,374	1,714,552	35,936,712

IRELAND.				
1879	6,458,676	3,085,963	942,433	10,487,072
1880	6,802,356	3,314,109	867,658	10,984,123
1881	7,300,706	3,586,348	875,826	11,262,880
1882	7,403,674	3,524,555	600,360	11,528,589
1883	7,526,871	3,602,384	605,777	11,735,032
1884	7,606,039	3,822,255	431,492	11,859,786
1885	8,012,700	3,866,715	871,399	12,250,814
1886	8,101,646	3,582,385	719,740	12,403,771
1887	8,129,324	3,864,570	512,956	12,506,850
1888	8,284,563	3,932,755	708,247	12,925,565
1889	8,405,861	4,076,722	871,472	13,354,055

UNITED KINGDOM.				
1879	115,188,046	107,620,202	3,043,594	225,851,842
1880	122,548,258	115,408,845	2,999,391	240,956,494
1881	126,442,983	119,458,943	2,565,448	248,467,374
1882	132,183,898	123,098,604	2,680,957	257,963,459
1883	138,176,940	127,983,253	2,737,043	268,897,236
1884	143,144,694	126,672,783	2,985,743	272,803,220
1885	146,458,206	125,929,338	2,476,511	274,864,055
1886	148,817,964	125,427,985	2,885,124	277,131,073
1887	151,821,634	128,368,564	2,662,577	282,852,775
1888	155,460,752	132,829,084	2,907,298	291,197,134
1889	161,082,875	138,941,233	3,092,845	303,116,953

No. 11.—COMPARISON of RECEIPTS from Passenger Trains and from Goods Trains, per Train Mile and per Mile of Open Railway, of Railway Companies in ENGLAND and WALES, SCOTLAND, and IRELAND, in each of the Years from 1879 to 1889.

Year.	Per Train Mile.				Per Open Mile of Railway.			
	England and Wales.	Scotland.	Ireland.	United Kingdom.	England and Wales.	Scotland.	Ireland.	United Kingdom.

FROM PASSENGER TRAINS.								
	d.	d.	d.	d.	£	£	£	£
1879 - -	*54·67	*45·49	*46·82	*55·35	1,759	867	595	1,464
1880 - -	*53·57	*47·02	*47·88	*52·65	1,828	906	608	1,517
1881 - -	*52·44	*47·60	*45·70	*51·57	†1,841	919	584	†1,524
1882 - -	*52·42	*48·95	*46·29	*51·75	1,879	946	603	1,560
1883 - -	*51·32	*48·02	*46·26	*50·73	1,900	973	607	1,580
1884 - -	*50·44	*46·37	*46·81	*49·86	1,918	978	600	1,592
1885 - -	*49·08	*44·40	*44·32	*48·32	1,865	966	586	1,553
1886 - -	*49·35	*42·90	*41·86	*48·27	1,884	990	563	1,565
1887 - -	*49·00	*41·42	*43·37	*47·90	1,886	971	563	1,562
1888 - -	*48·34	*41·84	*43·42	*47·37	1,879	1,021	566	1,564
1889 - -	*49·15	*41·87	*44·80	*48·17	1,979	1,040	577	1,636

FROM GOODS, &c. TRAINS.								
	d.	d.	d.	d.	£	£	£	£
1879 - -	*74·81	*65·74	*83·07	*73·85	2,261	1,362	531	1,892
1880 - -	*74·55	*66·39	*79·61	*73·66	2,407	1,405	515	1,994
1881 - -	*73·43	*67·26	*76·53	*72·76	†2,443	1,461	482	†2,025
1882 - -	*73·48	*67·65	*83·36	*73·05	2,457	1,492	521	2,045
1883 - -	*72·64	*65·76	*83·15	*72·07	2,488	1,529	518	2,072
1884 - -	*71·86	*63·01	*78·63	*70·91	2,397	1,476	504	1,997
1885 - -	*70·79	*62·20	*75·89	*69·85	2,301	1,444	485	1,924
1886 - -	*69·79	*62·10	*81·86	*69·15	2,253	1,417	483	1,881
1887 - -	*70·13	*62·82	*77·04	*69·42	2,293	1,419	479	1,907
1888 - -	*70·20	*64·00	*76·75	*69·62	2,352	1,474	477	1,956
1889 - -	*71·06	*65·19	*78·98	*70·54	2,488	1,536	495	2,060

FROM PASSENGER, GOODS, &c. TRAINS.								
	d.	d.	d.	d.	£	£	£	£
1879 - -	64·31	56·46	58·88	63·12	4,020	2,229	1,126	3,356
1880 - -	63·67	57·59	58·18	62·71	4,235	2,305	1,126	3,511
1881 - -	62·55	58·28	55·43	61·74	†4,289	2,380	1,066	†3,549
1882 - -	62·48	59·24	57·72	61·90	4,336	2,438	1,124	3,605
1883 - -	61·47	57·77	57·58	60·88	4,387	2,502	1,125	3,651
1884 - -	60·33	55·23	56·38	59·56	4,315	2,453	1,103	3,589
1885 - -	59·01	53·85	54·05	58·19	4,166	2,410	1,071	3,477
1886 - -	58·64	52·73	53·26	57·69	4,137	2,407	1,046	3,446
1887 - -	58·63	52·17	53·47	57·63	4,179	2,390	1,042	3,469
1888 - -	58·38	52·90	52·94	57·48	4,231	2,495	1,043	3,520
1889 - -	59·28	53·65	53·78	58·37	4,467	2,576	1,072	3,696

* Exclusive of receipts on railways in cases where the traffic is conveyed by mixed trains.

† See note, page 16.

No. 12.—COMPARISON of EXPENDITURE by RAILWAY COMPANIES in ENGLAND and WALES, SCOTLAND, and IRELAND, per Train Mile, and per Mile of Open Railway, in each of the Years from 1879 to 1889.

Year.	Per Train Mile.				Per Open Mile of Railway.			
	England and Wales.	Scotland.	Ireland.	United Kingdom.	England and Wales.	Scotland.	Ireland.	United Kingdom.

MAINTENANCE OF WAY.

	d.	d.	d.	d.	£	£	£	£
1879 - -	6·19	6·40	9·69	6·38	387	252	185	339
1880 - -	5·96	5·91	8·68	6·08	396	237	168	340
1881 - -	6·07	5·97	8·52	6·17	*477	244	164	*355
1882 - -	6·06	5·77	8·54	6·14	420	238	166	358
1883 - -	5·87	6·03	8·67	6·01	419	261	169	360
1884 - -	5·72	5·52	8·50	5·82	409	245	166	350
1885 - -	5·41	5·15	8·05	5·50	382	230	160	328
1886 - -	5·14	4·87	7·67	5·22	363	222	151	312
1887 - -	5·07	4·80	7·66	5·15	361	220	149	310
1888 - -	5·04	4·75	7·23	5·10	365	224	142	312
1889 - -	5·16	4·64	7·27	5·19	389	223	145	329

LOCOMOTIVE POWER.

	8·40	6·93	7·75	8·19	525	274	148	437
1879 - -	8·40	6·93	7·75	8·19	525	274	148	437
1880 - -	8·30	7·03	7·79	8·13	552	281	150	455
1881 - -	8·34	7·22	8·06	8·20	*571	294	155	*470
1882 - -	8·37	7·11	7·98	8·21	581	292	156	478
1883 - -	8·48	7·24	8·01	8·32	605	314	157	499
1884 - -	8·52	7·26	8·03	8·35	609	323	157	503
1885 - -	8·41	6·83	7·79	8·20	594	306	154	490
1886 - -	8·28	6·73	7·28	8·05	584	307	143	480
1887 - -	8·22	6·54	7·08	7·97	586	300	138	480
1888 - -	8·16	6·34	7·00	7·89	592	299	138	483
1889 - -	8·58	6·69	7·49	8·31	646	322	150	526

REPAIRS AND RENEWALS OF ROLLING STOCK.

	2·84	3·36	2·82	2·91	178	133	54	155
1879 - -	2·84	3·36	2·82	2·91	178	133	54	155
1880 - -	2·97	3·56	2·71	3·03	198	142	52	170
1881 - -	2·82	3·79	2·59	2·92	*193	155	50	*168
1882 - -	2·88	3·58	2·61	2·95	200	147	51	172
1883 - -	2·86	3·68	2·68	2·95	204	159	52	177
1884 - -	2·96	3·40	2·63	3·00	212	151	52	181
1885 - -	3·04	3·30	2·53	3·05	215	148	50	182
1886 - -	3·06	3·06	2·49	3·04	216	139	49	181
1887 - -	3·13	2·97	2·47	3·08	223	136	48	185
1888 - -	3·07	2·84	2·68	3·02	222	134	53	185
1889 - -	3·02	2·92	2·47	2·98	228	140	49	189

TRAFFIC CHARGES.

	10·76	8·71	8·53	10·41	672	344	163	553
1879 - -	10·76	8·71	8·53	10·41	672	344	163	553
1880 - -	10·41	8·59	8·25	10·10	693	344	159	566
1881 - -	10·35	8·63	8·15	10·05	*708	353	157	*577
1882 - -	10·39	8·83	8·37	10·12	721	363	163	590
1883 - -	10·27	8·54	8·42	9·99	733	370	165	599
1884 - -	10·20	8·39	8·38	9·91	729	373	164	597
1885 - -	10·15	8·42	8·08	9·86	716	377	160	589
1886 - -	10·07	8·34	7·86	9·76	710	381	154	583
1887 - -	10·05	8·17	7·83	9·73	716	374	153	586
1888 - -	10·02	8·11	7·45	9·68	726	382	147	593
1889 - -	10·04	8·29	7·44	9·71	756	398	148	615

* See note, page 16.

NO. 12.—COMPARISON of EXPENDITURE by RAILWAY COMPANIES in ENGLAND and WALES, SCOTLAND, and IRELAND, per Train Mile, and per Mile of Open Railway, in each of the Years from 1879 to 1889—*continued*.

Year	Per Train Mile.				Per Open Mile of Railway.			
	England and Wales.	Scotland.	Ireland.	United Kingdom.	England and Wales.	Scotland.	Ireland.	United Kingdom.

GENERAL CHARGES.

	d.	d.	d.	d.	£	£	£	£
1879 - -	1·47	1·29	1·71	1·46	92	51	33	77
1880 - -	1·43	1·29	1·69	1·43	95	52	33	80
1881 - -	1·44	1·27	1·65	1·43	*99	52	31	*82
1882 - -	1·49	1·26	1·63	1·47	103	52	32	85
1883 - -	1·47	1·24	1·65	1·45	105	54	32	87
1884 - -	1·46	1·19	1·66	1·44	105	53	32	87
1885 - -	1·45	1·18	1·54	1·43	103	53	31	85
1886 - -	1·46	1·17	1·48	1·43	103	53	29	85
1887 - -	1·46	1·17	1·50	1·42	104	54	29	86
1888 - -	1·44	1·17	1·64	1·42	105	55	32	87
1889 - -	1·41	1·15	1·60	1·39	106	55	32	88

RATES, TAXES, AND GOVERNMENT DUTY.

1879 - -	2·51	1·86	1·70	2·39	156	74	33	127
1880 - -	2·42	1·79	1·69	2·31	161	72	33	129
1881 - -	2·48	1·77	1·66	2·36	*170	72	32	*136
1882 - -	2·52	1·85	1·66	2·41	175	76	32	140
1883 - -	2·42	1·86	1·66	2·32	173	81	32	139
1884 - -	2·13	1·63	1·72	2·05	152	72	34	124
1885 - -	2·13	1·56	1·64	2·05	151	70	32	122
1886 - -	2·16	1·48	1·55	2·05	153	68	30	123
1887 - -	2·17	1·45	1·54	2·05	155	66	30	124
1888 - -	2·15	1·42	1·55	2·03	156	67	31	125
1889 - -	2·12	1·48	1·50	2·02	160	71	30	128

MISCELLANEOUS.

1879 - -	1·26	1·25	1·32	1·26	79	49	25	67
1880 - -	1·25	1·77	0·82	1·29	83	70	16	72
1881 - -	1·07	1·89	0·77	1·15	*73	77	15	*66
1882 - -	1·13	1·52	1·10	1·17	79	63	21	68
1883 - -	1·06	1·81	0·89	1·14	75	78	17	68
1884 - -	1·00	1·37	0·78	1·03	71	61	15	62
1885 - -	0·83	1·19	0·56	0·86	59	53	11	51
1886 - -	0·81	1·17	1·00	0·86	57	54	20	52
1887 - -	0·80	1·17	1·00	0·86	57	54	20	51
1888 - -	0·78	1·24	0·56	0·83	57	59	11	51
1889 - -	0·85	1·29	1·72	0·94	64	62	34	59

TOTAL.

1879 - -	33·43	29·80	33·52	33·00	2,089	1,177	641	1,755
1880 - -	32·74	29·94	31·63	32·37	2,178	1,198	611	1,812
1881 - -	32·57	30·54	31·40	32·28	*2,231	1,247	604	*1,854
1882 - -	32·84	29·92	31·89	32·47	2,279	1,231	621	1,891
1883 - -	32·42	30·39	31·97	32·17	2,314	1,316	625	1,929
1884 - -	31·98	28·76	31·69	31·59	2,287	1,278	620	1,904
1885 - -	31·43	27·64	30·19	30·93	2,219	1,237	598	1,848
1886 - -	30·98	26·82	29·33	30·41	2,186	1,224	576	1,816
1887 - -	30·90	26·27	29·08	30·26	2,202	1,204	567	1,822
1888 - -	30·66	25·87	28·11	29·97	2,223	1,220	554	1,836
1889 - -	31·18	26·46	29·49	30·54	2,349	1,271	588	1,934

* See note, page 16.

No. 12a.—COMPARISON of each ITEM of EXPENDITURE per Train Mile, of the Railways in the UNITED KINGDOM, in each of the Years from 1879 to 1889.

YEAR.	Main-tenance of Way.	Locomo-tive Power.	Rolling Stock.	Traffic Ex-penses.	General Charges.	Rates and Taxes.	*Govern-ment Duty.	Compensation.		Legal and Parlia-men-tary Ex-penses.	Miscel-laneous.	TOTAL.
								For Personal Injury.	For Damage to Goods.			
	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.
1879 - - -	6.38	8.19	2.91	10.41	1.46	1.63	0.80	0.22	0.20	0.23	0.60	33.00
1880 - - -	6.08	8.13	3.03	10.10	1.43	1.57	0.78	0.23	0.18	0.28	0.60	32.37
1881 - - -	6.17	8.20	2.92	10.05	1.43	1.61	0.79	0.24	0.18	0.28	0.45	32.28
1882 - - -	6.14	8.21	2.95	10.12	1.47	1.65	0.80	0.26	0.19	0.31	0.42	32.47
1883 - - -	6.01	8.32	2.95	9.99	1.45	1.66	0.69	0.22	0.18	0.33	0.41	32.17
1884 - - -	5.82	8.35	3.00	9.91	1.44	1.70	0.37	0.16	0.18	0.29	0.41	31.59
1885 - - -	5.50	8.20	3.05	9.86	1.43	1.75	0.31	0.11	0.16	0.22	0.38	30.93
1886 - - -	5.22	8.05	3.04	9.76	1.43	1.78	0.29	0.17	0.14	0.19	0.36	30.41
1887 - - -	5.15	7.97	3.08	9.73	1.42	1.79	0.28	0.15	0.14	0.21	0.36	30.26
1888 - - -	5.10	7.89	3.02	9.68	1.42	1.78	0.27	0.08	0.14	0.20	0.40	29.97
1889 - - -	5.19	8.31	2.98	9.71	1.39	1.76	0.27	0.20	0.15	0.21	0.39	20.54

* For Great Britain only. The railway passenger duty is not charged in Ireland.

No. 13.—COMPARISON of RECEIPTS per Train Mile, and Proportion per Cent. of EXPENDITURE to RECEIPTS, for the Years from 1879 to 1889, of the following Railway Companies.

YEAR.	Cale-donian.	Great Eastern.	Great Northern.	Great Western.	Great Southern and Western of Ireland.	Lan-cashire and Yorkshire.	London and North-Western.	London and South-Western.	London, Brighton, and South Coast.	Manches-ter, Shef-field, and Lincoln-shire.	Midland.	North-Eastern.	South-Eastern.
FROM PASSENGER TRAINS.													
	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.
1879 -	43.94	52.89	48.17	58.91	52.75	50.92	53.49	60.99	59.09	49.28	47.21	47.70	78.37
1880 -	45.16	52.30	44.25	58.15	54.01	49.84	53.22	62.71	59.89	49.83	43.05	48.46	77.79
1881 -	46.22	52.97	43.53	59.10	52.28	47.76	51.82	60.44	58.33	49.60	40.75	47.52	74.71
1882 -	48.82	51.34	43.59	59.19	55.13	46.66	52.08	59.27	57.54	49.96	42.05	47.65	71.81
1883 -	47.88	49.25	42.31	58.31	56.08	45.55	51.51	56.83	57.85	46.80	41.58	46.30	70.35
1884 -	44.96	50.41	40.51	58.33	52.81	44.04	50.11	57.05	56.61	46.48	41.60	44.94	65.87
1885 -	43.28	49.53	39.55	58.26	49.30	42.19	49.44	56.43	53.98	45.93	40.51	43.57	64.24
1886 -	42.28	48.95	39.44	57.85	46.15	42.74	50.94	57.16	57.10	44.68	40.49	42.71	66.97
1887 -	41.67	47.99	38.78	56.18	49.44	43.68	51.37	56.92	56.30	45.58	40.58	43.03	64.21
1888 -	43.25	47.24	39.23	55.19	48.08	43.31	51.40	55.47	55.01	45.05	39.53	42.53	63.89
1889 -	42.69	48.35	39.93	55.71	49.12	42.31	52.08	56.42	56.17	46.28	39.21	44.91	64.05
FROM GOODS, &c. TRAINS.													
	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.
1879 -	64.33	79.26	65.41	64.69	75.67	99.68	81.30	71.43	101.26	78.12	62.81	79.89	93.32
1880 -	68.34	78.63	64.22	64.45	73.93	98.59	78.11	73.51	98.34	76.14	61.77	82.12	90.53
1881 -	69.18	77.41	63.01	64.90	69.88	95.55	77.60	70.89	96.81	76.28	60.20	80.43	88.64
1882 -	71.30	76.21	61.96	64.16	73.46	98.20	79.28	70.65	92.38	77.84	60.74	80.22	79.83
1883 -	68.18	69.20	61.05	64.96	74.40	99.44	77.95	71.14	91.30	77.71	61.17	73.55	85.40
1884 -	64.23	68.15	60.31	64.10	73.25	96.09	79.48	68.93	90.03	76.44	61.16	76.00	81.75
1885 -	63.46	65.77	59.65	63.49	70.91	94.09	78.37	67.87	89.52	75.05	60.99	75.54	81.10
1886 -	64.33	63.39	59.27	62.87	75.39	93.79	78.48	65.37	90.83	71.84	60.28	73.71	79.32
1887 -	66.75	62.04	59.77	63.75	74.19	93.93	78.70	67.73	93.68	68.32	60.88	73.48	76.99
1888 -	69.84	61.62	58.83	63.60	74.01	94.80	79.34	67.93	94.05	67.15	60.75	74.12	76.57
1889 -	70.30	62.03	60.81	64.41	74.89	95.68	79.05	69.47	96.33	67.31	61.19	76.11	78.31
FROM PASSENGER, GOODS, &c. TRAINS.													
	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.
1879 -	55.37	62.92	57.14	61.95	61.95	72.83	67.51	64.09	66.55	67.02	57.03	66.77	81.53
1880 -	57.79	62.03	54.14	61.46	61.93	71.64	66.17	65.89	66.72	66.56	54.43	69.23	80.57
1881 -	58.89	62.11	53.43	62.11	59.33	69.10	65.20	63.51	65.19	66.50	52.45	67.74	77.80
1882 -	61.19	60.55	52.80	61.84	62.66	68.67	65.94	62.50	63.65	67.64	53.28	67.57	73.61
1883 -	59.22	56.95	51.76	61.83	63.58	68.09	64.89	60.78	63.86	66.08	53.41	65.78	73.71
1884 -	55.62	57.35	50.09	61.33	61.06	65.58	64.29	60.31	62.49	65.00	53.19	63.10	69.35
1885 -	54.28	55.90	49.30	60.96	57.58	63.02	63.37	59.58	60.15	63.71	52.53	61.88	67.87
1886 -	53.71	54.67	49.07	60.36	56.97	63.56	64.18	59.47	63.07	61.39	51.94	60.18	69.72
1887 -	54.50	53.57	48.93	59.99	59.94	64.41	64.56	59.96	62.80	60.03	52.33	60.28	66.97
1888 -	56.66	52.95	48.83	59.45	57.93	64.51	64.97	58.92	61.65	59.26	51.96	60.66	66.65
1889 -	56.50	53.83	50.13	60.10	59.03	63.69	65.23	60.01	62.82	60.02	52.19	63.06	67.10
PROPORTION OF EXPENDITURE TO RECEIPTS.													
	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.
1879 -	52	55	55	50	57	54	51	57	47	49	51	50	50
1880 -	52	53	54	49	55	55	50	56	47	48	51	51	49
1881 -	54	53	54	49	57	55	51	58	49	49	52	51	50
1882 -	51	53	57	48	55	56	50	59	52	49	53	51	51
1883 -	54	55	57	49	54	55	50	59	52	50	53	51	51
1884 -	54	53	56	48	55	54	51	59	51	50	53	54	51
1885 -	52	53	56	48	57	58	51	59	50	50	53	55	51
1886 -	52	53	57	48	55	56	51	57	48	48	53	54	50
1887 -	51	52	57	48	54	54	51	54	48	51	53	54	50
1888 -	48	52	56	48	54	52	51	54	48	50	53	54	51
1889 -	49	52	57	49	52	54	51	53	47	49	53	53	51

No. 14.—COMPARISON of EXPENDITURE per Train Mile for the Years from 1879 to 1889, of the following Railway Companies.

Note.—The expenditure of the lines worked by the several Companies is included.

Year.	Caledonian.	Great Eastern.	Great Northern.	Great Western.	Great Southern and Western of Ireland.	Lancashire and Yorkshire.	London and North-Western.	London and South-Western.	London, Brighton, and South Coast.	Manchester, Sheffield, and Lincolnshire.	Midland.	North-Eastern.	South-Eastern.
MAINTENANCE OF WAY.													
1879	d. 5·61	d. 6·41	d. 5·82	d. 7·12	d. 10·46	d. 5·80	d. 6·40	d. 6·75	d. 4·64	d. 4·79	d. 5·14	d. 6·15	d. 5·93
1880	5·02	5·22	5·06	6·91	8·64	6·43	5·97	6·88	4·74	4·59	4·84	6·09	5·83
1881	5·00	5·26	4·90	7·29	8·19	6·29	6·25	7·10	4·80	4·65	4·96	6·20	5·88
1882	5·23	5·24	4·82	7·15	7·74	6·28	6·20	6·80	4·91	4·63	5·09	6·39	5·54
1883	4·77	5·15	4·72	7·11	8·64	6·39	5·95	6·39	4·98	4·46	4·75	6·18	5·39
1884	5·04	4·98	4·56	6·90	8·13	6·23	6·07	6·53	4·90	4·40	4·48	6·19	4·97
1885	4·57	4·78	4·43	6·51	7·90	6·09	5·81	6·25	4·76	4·44	4·14	5·60	4·79
1886	4·39	4·62	4·43	6·25	7·23	5·85	5·81	6·07	4·82	4·13	4·03	4·71	4·51
1887	4·48	4·45	4·67	6·29	7·59	5·19	5·66	5·83	5·17	4·06	3·74	4·64	4·14
1888	4·22	4·36	4·42	6·21	7·35	5·35	5·94	5·73	5·05	4·06	3·53	4·76	4·40
1889	4·10	4·42	4·86	6·37	7·22	5·69	5·94	5·73	4·76	4·06	3·57	5·21	4·16
LOCOMOTIVE POWER.													
1879	7·18	9·18	7·61	7·38	8·19	9·50	7·70	8·37	8·37	6·75	7·87	9·96	10·04
1880	7·60	8·74	7·24	7·39	9·03	9·70	7·43	8·61	8·36	6·82	7·46	10·23	9·65
1881	8·06	8·85	7·26	7·39	9·54	9·99	7·54	8·32	8·68	6·72	7·45	10·18	9·57
1882	7·63	8·66	7·60	7·57	9·33	9·63	7·55	8·45	9·03	7·18	7·47	10·30	8·77
1883	7·96	8·94	7·75	7·63	9·31	8·76	7·70	8·33	9·10	7·45	7·75	10·62	9·01
1884	8·13	8·56	7·62	7·69	9·09	8·10	7·86	9·68	8·97	7·13	7·67	10·75	8·61
1885	7·11	8·40	7·60	7·58	8·86	9·33	7·82	9·86	8·56	6·74	7·44	10·43	8·47
1886	7·19	8·06	7·57	7·57	8·86	9·65	7·89	9·41	8·38	6·18	7·14	10·28	8·10
1887	6·97	7·89	7·58	7·64	8·29	9·45	7·96	8·53	8·29	6·19	7·31	10·23	7·75
1888	6·62	7·92	7·80	7·52	8·09	8·36	7·90	8·18	8·30	6·26	7·32	10·34	7·80
1889	6·91	8·23	8·25	7·92	8·51	9·44	8·13	8·40	8·76	6·96	7·67	10·72	8·47
REPAIRS AND RENEWALS OF ROLLING STOCK.													
1879	3·10	3·10	2·82	2·48	3·90	4·71	2·34	2·85	2·28	3·06	2·46	4·09	2·69
1880	3·79	2·74	2·59	2·43	3·65	3·83	2·18	2·47	2·37	3·07	2·46	6·35	2·63
1881	4·31	2·75	2·56	2·40	3·34	3·43	2·17	2·47	2·47	3·06	2·29	5·34	2·57
1882	4·11	2·75	2·52	2·45	3·03	3·89	2·19	2·64	2·73	3·01	2·45	5·11	2·65
1883	4·60	2·65	2·48	2·43	3·00	4·10	2·09	2·68	2·74	2·86	3·00	4·42	2·72
1884	3·99	2·63	2·46	2·43	2·95	3·94	2·34	2·68	2·48	2·81	3·64	4·35	2·79
1885	3·76	2·38	2·37	2·48	2·92	4·17	2·40	2·73	2·18	2·82	3·91	5·09	2·86
1886	3·45	2·35	2·42	2·48	2·98	3·25	2·63	2·44	2·11	2·63	4·15	5·44	3·03
1887	3·50	2·27	2·37	2·49	3·00	3·64	2·65	2·44	2·15	2·52	4·25	5·65	2·98
1888	3·43	2·29	2·37	2·58	3·09	2·80	2·65	2·44	2·14	2·45	4·21	5·40	3·04
1889	3·41	2·34	2·40	2·69	2·88	2·49	2·50	2·52	1·90	2·34	4·10	5·33	3·01
TRAFFIC CHARGES.													
1879	8·64	11·18	10·56	8·69	9·03	14·59	12·69	12·76	9·22	12·33	9·93	9·64	11·02
1880	8·75	11·20	9·98	8·55	9·02	14·07	12·28	12·90	8·92	12·13	9·44	9·11	10·66
1881	8·88	11·05	9·78	8·45	9·01	13·66	12·23	12·91	8·79	12·36	9·25	9·08	10·54
1882	9·21	10·84	9·85	8·41	9·47	13·72	12·57	12·49	9·06	12·23	9·44	9·02	10·31
1883	8·86	10·26	9·78	8·48	9·69	13·75	12·26	12·47	9·05	11·88	9·30	9·05	10·11
1884	8·50	10·19	9·57	8·62	9·47	13·21	12·21	11·23	8·99	11·88	9·38	9·17	9·80
1885	8·50	10·05	9·53	8·67	9·29	12·98	11·93	11·44	8·85	11·95	9·28	9·27	9·80
1886	8·55	9·91	9·46	8·66	9·16	12·76	12·04	11·13	9·01	11·42	9·36	8·82	10·04
1887	8·40	9·71	9·44	8·76	9·60	12·55	12·24	10·93	8·88	11·11	9·40	8·69	9·92
1888	8·47	9·59	9·39	8·69	8·63	12·97	12·35	10·63	8·62	11·19	9·40	8·59	10·05
1889	8·61	9·52	9·40	8·69	8·40	12·73	12·42	10·36	8·56	10·99	9·40	8·74	10·26

No. 14.—COMPARISON of EXPENDITURE per Train Mile for the Years from 1879 to 1889, of the following Railway Companies—*continued*.

Note.—The expenditure of the lines worked by the several Companies is included.

Year.	Caledonian.	Great Eastern.	Great Northern.	Great Western.	Great Southern and Western of Ireland.	Lancashire and Yorkshire.	London and North-Western.	London and South-Western.	London, Brighton, and South Coast.	Manchester, Sheffield, and Lincolnshire.	Midland.	North-Eastern.	South-Eastern.
GENERAL CHARGES.													
1879.	d. 1.18	d. 1.26	d. 1.50	d. 1.19	d. 0.71	d. 1.38	d. 1.48	d. 1.21	d. 1.46	d. 1.86	d. 1.14	d. 1.12	d. 3.09
1880	1.27	1.37	1.47	1.12	0.85	1.37	1.42	1.24	1.44	1.81	1.10	1.07	3.13
1881	1.27	1.40	1.42	1.12	0.84	1.36	1.52	1.24	1.38	1.85	1.03	1.07	3.17
1882	1.28	1.40	1.41	1.17	0.88	1.44	1.53	1.24	1.44	1.87	1.03	1.24	3.11
1883	1.25	1.34	1.45	1.21	0.83	1.46	1.55	1.14	1.30	1.89	1.03	1.15	3.07
1884	1.20	1.32	1.39	1.21	0.84	1.43	1.55	1.17	1.28	1.86	1.04	1.12	2.90
1885	1.21	1.33	1.34	1.18	0.82	1.45	1.52	1.12	1.09	1.82	1.03	1.13	2.91
1886	1.26	1.28	1.29	1.23	0.82	1.43	1.54	1.22	1.13	1.72	1.00	1.14	3.07
1887	1.29	1.34	1.28	1.20	0.87	1.34	1.54	1.29	1.08	1.70	0.99	1.09	2.98
1888	1.33	1.28	1.33	1.16	1.33	1.36	1.61	1.26	1.06	1.73	0.95	1.05	3.01
1889	1.30	1.30	1.31	1.15	1.29	1.29	1.57	1.26	1.06	1.65	0.92	1.01	2.61

RATES, TAXES, AND GOVERNMENT DUTY.

1879	1.90	2.64	2.18	2.41	*2.20	2.57	2.44	2.80	3.77	1.91	1.91	2.31	5.33
1880	1.81	2.64	2.12	2.35	*2.32	2.55	2.32	2.80	3.59	1.77	1.86	2.22	5.09
1881	1.76	2.73	2.11	2.42	*2.25	2.45	2.43	2.83	3.76	1.98	1.84	2.12	5.18
1882	1.90	2.68	2.16	2.55	*2.34	2.45	2.35	2.90	3.87	1.96	1.90	2.01	5.10
1883	1.86	2.42	2.06	2.45	*2.38	2.44	2.26	2.80	3.81	1.90	1.77	1.97	5.02
1884	1.65	1.93	1.81	2.23	*2.49	2.12	1.88	2.51	3.48	1.80	1.50	1.96	4.22
1885	1.51	1.97	1.77	2.17	*2.28	2.20	1.93	2.43	3.11	1.88	1.55	2.09	4.32
1886	1.49	1.90	1.73	2.26	*2.09	2.26	1.95	2.44	3.52	1.67	1.57	2.15	4.47
1887	1.51	1.91	1.73	2.23	*2.15	2.24	2.05	2.54	3.27	1.70	1.63	2.08	4.05
1888	1.49	1.92	1.70	2.19	*2.18	2.24	2.09	2.53	3.19	1.71	1.57	2.05	4.04
1889	1.63	1.99	1.69	2.12	*2.14	2.13	2.00	2.57	3.28	1.62	1.55	1.99	4.10

MISCELLANEOUS.

1879	1.45	0.69	0.80	1.40	0.69	0.61	1.59	1.73	1.83	2.23	0.67	0.30	2.31
1880	1.87	0.74	0.81	1.29	0.66	1.12	1.54	1.93	1.82	2.08	0.66	0.40	2.18
1881	2.52	0.74	0.83	1.09	0.58	0.71	0.96	1.97	1.83	2.05	0.63	0.38	1.92
1882	1.84	0.64	1.48	0.66	1.91	1.25	0.88	2.12	2.22	2.21	0.71	0.50	1.74
1883	2.52	0.75	1.09	0.71	0.60	0.64	0.94	1.97	2.06	2.30	0.53	0.43	2.05
1884	1.62	1.01	0.67	0.59	0.68	0.50	0.92	1.93	1.74	2.62	0.55	0.34	2.00
1885	1.44	0.71	0.55	0.51	0.50	0.52	0.81	1.50	1.32	2.13	0.42	0.31	1.27
1886	1.51	0.65	1.07	0.47	0.52	0.75	0.77	1.13	1.14	1.86	0.36	0.25	1.35
1887	1.55	0.45	0.64	0.44	0.44	0.51	0.84	1.05	1.23	3.57	0.38	0.22	1.35
1888	1.67	0.40	0.50	0.42	0.50	0.39	0.72	0.89	1.22	2.35	0.42	0.28	1.43
1889	1.65	0.37	0.46	0.42	0.47	0.56	0.99	0.71	1.40	2.03	0.43	0.48	1.31

TOTAL.

1879	29.06	34.46	31.29	30.67	35.18	39.16	34.64	36.47	31.57	32.98	29.12	33.57	40.41
1880	30.11	32.65	29.27	30.04	34.17	39.07	33.14	36.83	31.24	32.27	27.82	35.47	39.17
1881	31.80	32.78	28.86	30.16	33.75	37.89	33.10	36.84	31.71	32.67	27.45	34.37	38.83
1882	31.20	32.21	29.84	29.96	34.70	38.66	33.27	36.64	33.26	33.09	28.09	34.57	37.22
1883	31.82	31.52	29.36	30.02	34.47	37.56	32.76	35.79	33.04	32.74	28.15	33.87	37.37
1884	30.13	30.62	28.12	29.67	33.65	35.53	32.83	35.73	31.85	32.51	28.26	33.89	35.29
1885	28.10	29.62	27.59	29.10	32.57	36.74	32.22	35.33	29.87	31.78	27.77	33.92	34.42
1886	27.84	28.77	27.97	28.92	31.16	35.45	32.63	33.84	30.11	29.61	27.61	32.79	34.57
1887	27.70	28.02	27.71	29.05	31.94	34.92	32.94	32.61	30.07	30.85	27.70	32.60	33.17
1888	27.22	27.76	27.51	28.77	31.17	33.47	33.26	31.66	29.58	29.75	27.40	32.47	33.77
1889	27.61	28.17	28.37	29.36	30.91	34.33	33.55	31.60	29.72	29.65	27.64	33.48	33.92

* The railway passenger duty is not charged in Ireland.

No. 15.—COMPARISON of the TOTAL NUMBER, and of the NUMBER PER MILE of OPEN RAILWAY of LOCOMOTIVES, CARRIAGES, and other VEHICLES in each of the Years from 1879 to 1889.

Years.	Locomotives.		Carriages used for the Conveyance of Passengers only.		Other Vehicles attached to Passenger Trains.		Waggons of all Kinds used for the Conveyance of Live Stock, Minerals, or General Merchandise.		Any other Carriages or Waggons used on the Railway not included in the preceding Columns.		Total of Vehicles, excluding Locomotives.	
	No.	No. per Mile.	No.	No. per Mile.	No.	No. per Mile.	No.	No. per Mile.	No.	No. per Mile.	No.	No. per Mile.
1879	10,977	*87	23,877	1*90	9,296	*74	275,125	21*93	9,938	*79	318,236	25*36
1880	11,172	*88	24,658	1*95	9,384	*74	282,477	22*32	10,060	*79	326,579	25*80
1881	11,474	*90	25,542	2*00	9,637	*75	289,703	22*62	11,306	*88	336,188	26*25
1882	11,847	*91	26,224	2*01	9,790	*75	304,656	23*34	10,773	*83	351,443	26*93
1883	12,144	*92	27,274	2*06	10,133	*77	329,622	24*94	10,609	*80	377,633	28*57
1884	12,482	*94	27,905	2*09	10,390	*77	349,850	26*23	10,621	*80	398,706	29*89
1885	12,840	*94	28,821	2*08	10,461	*77	357,909	26*29	10,709	*79	407,431	29*93
1886	13,006	*95	28,821	2*11	10,514	*77	362,134	26*48	11,074	*81	412,543	30*16
1887	13,134	*95	29,524	2*14	10,407	*75	366,908	26*54	11,437	*83	418,276	30*26
1888	13,256	*95	29,966	2*14	10,876	*78	373,593	26*72	11,772	*84	426,207	30*48
1889	13,447	*96	30,512	2*17	11,057	*79	385,079	27*44	12,725	*91	439,373	31*31

ENGLAND AND WALES.

	No.	No. per Mile.	No.	No. per Mile.	No.	No. per Mile.	No.	No. per Mile.	No.	No. per Mile.	No.	No. per Mile.
1879	10,977	*87	23,877	1*90	9,296	*74	275,125	21*93	9,938	*79	318,236	25*36
1880	11,172	*88	24,658	1*95	9,384	*74	282,477	22*32	10,060	*79	326,579	25*80
1881	11,474	*90	25,542	2*00	9,637	*75	289,703	22*62	11,306	*88	336,188	26*25
1882	11,847	*91	26,224	2*01	9,790	*75	304,656	23*34	10,773	*83	351,443	26*93
1883	12,144	*92	27,274	2*06	10,133	*77	329,622	24*94	10,609	*80	377,633	28*57
1884	12,482	*94	27,905	2*09	10,390	*77	349,850	26*23	10,621	*80	398,706	29*89
1885	12,840	*94	28,821	2*08	10,461	*77	357,909	26*29	10,709	*79	407,431	29*93
1886	13,006	*95	28,821	2*11	10,514	*77	362,134	26*48	11,074	*81	412,543	30*16
1887	13,134	*95	29,524	2*14	10,407	*75	366,908	26*54	11,437	*83	418,276	30*26
1888	13,256	*95	29,966	2*14	10,876	*78	373,593	26*72	11,772	*84	426,207	30*48
1889	13,447	*96	30,512	2*17	11,057	*79	385,079	27*44	12,725	*91	439,373	31*31

SCOTLAND.

	No.	No. per Mile.	No.	No. per Mile.	No.	No. per Mile.	No.	No. per Mile.	No.	No. per Mile.	No.	No. per Mile.
1879	1,612	*56	3,482	1*21	1,237	*43	82,386	28*77	1,166	*41	88,271	30*82
1880	1,618	*56	3,532	1*22	1,243	*43	85,015	29*24	1,174	*40	90,964	31*29
1881	1,647	*56	3,560	1*22	1,243	*42	87,780	29*99	1,158	*40	93,741	32*03
1882	1,662	*57	3,584	1*22	1,268	*43	89,362	30*39	1,166	*40	95,380	32*44
1883	1,693	*57	3,591	1*21	1,269	*43	91,444	30*85	1,166	*39	97,470	32*88
1884	1,713	*57	3,677	1*23	1,341	*45	91,865	30*63	1,162	*39	98,045	32*69
1885	1,718	*58	3,773	1*26	1,388	*47	92,793	31*12	1,162	*39	99,116	33*24
1886	1,739	*58	3,852	1*27	1,393	*46	92,845	30*72	1,177	*39	99,267	32*85
1887	1,752	*57	3,914	1*27	1,509	*49	93,724	30*44	1,178	*38	100,325	32*58
1888	1,763	*57	3,976	1*28	1,544	*50	98,529	31*82	1,190	*38	105,239	33*98
1889	1,791	*57	4,077	1*31	1,554	*50	103,917	33*33	1,230	*39	110,778	35*53

IRELAND.

	No.	No. per Mile.	No.	No. per Mile.	No.	No. per Mile.	No.	No. per Mile.	No.	No. per Mile.	No.	No. per Mile.
1879	585	*26	1,358	*59	627	*27	12,183	5*33	448	*20	14,616	6*39
1880	594	*25	1,375	*58	659	*28	12,442	5*25	447	*19	14,923	6*30
1881	606	*25	1,387	*57	658	*27	12,529	5*13	455	*19	15,029	6*16
1882	619	*25	1,442	*59	702	*28	12,777	5*18	317	*13	15,238	6*18
1883	632	*25	1,439	*58	622	*25	13,195	5*27	297	*12	15,553	6*22
1884	632	*25	1,449	*57	843	*33	13,230	5*24	453	*18	15,975	6*33
1885	638	*25	1,533	*59	712	*28	13,451	5*22	302	*12	15,998	6*21
1886	655	*25	1,543	*59	766	*29	13,558	5*15	413	*16	16,280	6*19
1887	666	*25	1,583	*59	751	*28	13,696	5*12	294	*11	16,324	6*10
1888	675	*25	1,606	*59	764	*28	13,966	5*11	317	*11	16,653	6*09
1889	686	*25	1,548	*55	890	*32	14,264	5*11	380	*14	17,082	6*12

UNITED KINGDOM.

	No.	No. per Mile.	No.	No. per Mile.	No.	No. per Mile.	No.	No. per Mile.	No.	No. per Mile.	No.	No. per Mile.
1879	13,174	*74	28,717	1*62	11,160	*63	369,694	20*89	11,552	*65	421,123	23*79
1880	13,384	*75	29,565	1*65	11,286	*63	379,934	21*19	11,681	*65	432,466	24*12
1881	13,727	*76	30,489	1*68	11,538	*63	390,012	21*46	12,919	*71	444,958	24*48
1882	14,128	*77	31,250	1*69	11,760	*64	406,795	22*04	12,256	*66	462,061	25*03
1883	14,469	*77	32,304	1*73	12,024	*64	434,261	23*25	12,072	*65	490,661	26*27
1884	14,827	*79	33,031	1*75	12,514	*66	454,945	24*12	12,236	*65	512,726	27*18
1885	15,196	*79	33,658	1*76	12,561	*66	464,153	24*21	12,173	*63	522,543	27*26
1886	15,400	*80	34,216	1*77	12,673	*66	468,537	24*24	12,664	*66	528,080	27*32
1887	15,552	*79	35,021	1*79	12,667	*65	474,328	24*23	12,909	*66	534,925	27*32
1888	15,694	*79	35,548	1*79	13,184	*67	486,088	24*54	13,279	*67	548,099	27*67
1889	15,924	*80	36,137	1*81	13,501	*68	503,260	25*23	14,335	*72	567,233	28*44

NOTE.—The numbers in the above table refer only to the carriages, waggons, &c. belonging to or hired by the railway companies.

SESSION 1890.

REPORT by the BOARD OF TRADE on the APPLICATIONS made during the YEAR 1889 under the RAILWAYS CONSTRUCTION FACILITIES ACT, 1864, and of the PROCEEDINGS of the BOARD OF TRADE with respect thereto.

(PRESENTED PURSUANT TO ACT.)

*Ordered, by The House of Commons, to be Printed,
1 July 1890.*

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Railways Construction Facilities Act, 1864.

SESSION 1890.

REPORT by the BOARD OF TRADE on the APPLICATIONS made during the YEAR 1889 under the RAILWAYS CONSTRUCTION FACILITIES ACT, 1864, and of the PROCEEDINGS of the BOARD OF TRADE with respect thereto.

Two applications were made in the year 1889, one in June by the Promoters of the Lee-on-the-Solent (Light) Railway, and the other in November by the Lambourn Valley Railway Company.

I.—*Lee-on-the-Solent (Light) Railway.*

This was an application made by Charles Edward Morgan, Charles Langley Whetham, James Edward Hunter, William Stephens Cross, and Harry Emans Pollard for a certificate to incorporate a company under the name of "the Lee-on-the-Solent Railway Company," and to authorise the construction of a light railway, 3 miles 9·5 chains in length, at an estimated cost of 22,052*l.* 8*s.*, in the parishes of Titchfield, Rowner, and Alverstoke, in the county of Southampton, commencing in the parish of Titchfield and terminating at Brockhurst Station of the London and South-Western Railway.

The proposed gauge was 4 feet 8½ inches, power being reserved to lay down a third rail so as to accommodate tramway rolling stock. The draft certificate provided that the line might be constructed and worked as a light railway under the Regulation of Railways Act, 1868, and also contained provisions empowering the Company to enter into agreements for working the railway or to lease the railway for any term of years.

Proof was duly given to the satisfaction of the Board of Trade that the Promoters had contracted for the purchase of all the lands required for the railway, and had complied with the provisions of the Railways Construction Facilities Act, 1864, and of the General Rules thereunder.

Representations were received from the Fareham District Highway Board with respect to the arrangements at the proposed level crossings of certain public footpaths, the Highway Board considering that subways ought to be provided. In reply, the Board of Trade pointed out that objections would probably be raised by the War Department to the construction of subways, but that if foot-bridges were found desirable, they could be ordered by the Board of Trade when the railway was completed and submitted for inspection.

No other representations were received by the Board of Trade as to the proposed certificate.

The Board of Trade appointed one of their inspecting officers to report to the Board of Trade on the plan of the projected railway. That officer pointed out that it was intended to cross two public roads on the level, but that there was no special objection to be taken to the crossings, except that a proposed oblique crossing should be made square or nearly so, by a slight deviation of the road. The plans were amended accordingly.

The Board of Trade thereupon proceeded to settle the draft certificate, inserting a clause which provided for a revision of the classification of merchandise traffic and maximum tolls and charges in accordance with the provisions of section 24 of the Railway and Canal Traffic Act, 1888, within three years from the issue of the certificate.

The draft certificate, as settled by the Board of Trade, was laid before the House of Commons on the 14th April 1890, and before the House of Lords on the 17th April 1890. As neither House of Parliament resolved within the prescribed period of six weeks that the certificate ought not to be made, the Board of Trade, at the expiration of the said period of six weeks, issued to the Promoters a warrant for the payment into Court of a sum of 1,765*l.*, being the sum required to be deposited under the Act as security for the completion of the railway. On receiving proof that this

deposit has been duly made, the Board of Trade will be prepared to make and issue the certificate in conformity with the draft laid before Parliament, copy of which is appended hereto.

Note—A certificate in conformity with the draft was issued on July 5th and published in the “London Gazette” on July 11th.

II.—Lambourn Valley Railway Deviations.

This was an application made by the Lambourn Valley Railway Company, incorporated by Act of Parliament, to authorise certain deviations from the line of railway authorised by the Lambourn Valley Railway Act, 1883, and the abandonment of so much of the authorised railway as was situated between the points of commencement and termination of the several deviations.

The estimated cost of the proposed deviations was 30,501*l.*, and of the portions proposed to be abandoned, 33,669*l.*

Proof was duly given to the satisfaction of the Board of Trade that the Promoters had contracted for the purchase of all the lands required for the deviations, and had complied with the provisions of the Railways Construction Facilities Act, 1864, and of the General Rules thereunder.

Representations were received from the Corporation of Newbury, and from Mr. J. C. Pinniger, of Newbury, but both parties were satisfied with the explanations of the Promoters.

The inspecting officer to whom the plans were referred reported that he saw no objection from an engineering point of view to the curves and gradients of the proposed deviations, but pointed out that, in certain cases, the height and width of bridges and the inclination of a road were not in accordance with section 49 of the Railways Clauses Act, 1845, and would require to be specially sanctioned in the certificate.

The draft certificate, as settled by the Board of Trade, was laid before both Houses of Parliament on the 24th April 1890, and as neither House resolved within the prescribed period of six weeks that the certificate ought not to be made, the Board of Trade, on the 10th June 1890, made the certificate in conformity with the draft laid before Parliament, and issued it to the Promoters.

On the 17th June 1890 the certificate was published in the “London Gazette,” and a copy thereof is appended hereto.

Board of Trade, Whitehall Gardens,
27th June 1890.

HENRY G. CALCRAFT,
Secretary to the Board of Trade.

APPENDIX I.

LEE-ON-THE-SOLENT (LIGHT) RAILWAY.

DRAFT CERTIFICATE of the BOARD OF TRADE for the CONSTRUCTION of the RAILWAY and for other purposes.

Preamble.

WHEREAS Charles Edward Morgan of 38 James Street Buckingham Gate London Colonel Charles Langley Whetham of 40 Gracechurch Street London Merchant James Edward Hunter of the United Service Club Pall Mall London Captain in the Royal Navy William Stephens Cross of 18 Outer Temple London Architect and Surveyor and Harry Emans Pollard of 14 Duke Street Adelphi London Surveyor the Promoters of the Lee-on-the-Solent (Light) Railway have contracted for the purchase of the lands required for the railway and the works connected therewith and have complied with the requirements of “The Railways Construction Facilities Act 1864” and “The Railways (Powers and Construction) Acts 1864 Amendment Act 1870.”

Now therefore the Board of Trade do by this their certificate in pursuance of the said Acts and by virtue and in exercise of the powers thereby in them vested and of every other power enabling them in this behalf certify as follows:

Short title.

1. This certificate may be cited as “The Lee-on-the-Solent (Light) Railway Certificate, 1890.”

Incorporation
of general
Acts.

2. The Companies Clauses Consolidation Act 1845 Part I (relating to cancellation and surrender of shares) and Part III (relating to debenture stock) of the Companies Clauses Act 1863 as amended by the Companies Clauses Act 1869 the Lands Clauses Consolidation Act 1845 and 1860 the Railways Clauses Consolidation Act 1845 Part I (relating to construction of a railway) and Part III (relating to working agreements) of the Railways Clauses Act 1863 are with the exceptions and subject to the provisions of the Railways Construction Facilities Act 1864 incorporated with and form part of this certificate except where varied by or inconsistent with this certificate.

3. In this certificate the several words and expressions to which meanings are assigned by the Acts wholly or partially incorporated herewith have the same respective meanings unless there be something in the subject or context repugnant to such construction. The expression "the Company" means the Company incorporated by this certificate the expressions "the railway" and "the undertaking" mean respectively the railway and the undertaking by this certificate authorised and for the purposes of this certificate the expression "superior courts" or "court of competent jurisdiction" or any other like expression in this certificate or any Act wholly or partially incorporated herewith shall be read and have effect as if the debt or demand with respect to which the expression is used were a simple contract debt and not a debt or demand created by statute.

4. Charles Edward Morgan Charles Langley Whetham James Edward Hunter William Stephens Cross and Harry Emans Pollard and all other persons and corporations who have already subscribed to or shall hereafter become proprietors in the undertaking and their executors administrators successors and assigns respectively shall be and are hereby united into a Company for the purpose of making and maintaining the railway and for other the purposes of this certificate and for those purposes shall be and are hereby incorporated by the name of "The Lee-on-the-Solent Railway Company" and by that name shall be a body corporate with perpetual succession and a common seal and with power to purchase take hold and dispose of lands and other property for the purposes of this certificate.

5. Subject to the provisions of this certificate the Company may on the lands contracted to be purchased by them as aforesaid make and maintain in the line and according to the levels shown on the deposited plans and sections the railway hereinafter described with all proper stations sidings approaches works and conveniences connected therewith. The railway hereinbefore referred to and authorised by this certificate is—

A railway 3 miles 0 furlongs 9·5 chains in length situate in the parishes of Titchfield Rowner and Alverstoke in the county of Southampton commencing in the parish of Titchfield at a point in the hedge which forms the North Western boundary of the enclosure numbered 2029 on the $\frac{1}{25000}$ scale Ordnance Map which point is twenty-two yards from the face of the sea wall and terminating in the parish of Alverstoke at a point in the fence on the eastern side of the road that crosses the London and South Western Railway on the level at Brockhurst station which point is about nine yards to the south west of the South Western Rail.

6. The Company shall make the railway on the gauge of four feet eight inches and half an inch and may lay down between the rails of the railway a third rail so as to accommodate tramway rolling stock.

7. The railway may be constructed and worked as a light railway within the meaning and subject to the provisions of the Regulation of Railways Act 1868.

8. The capital of the Company shall be thirty thousand pounds in three thousand shares of ten pounds each.

9. The Company shall not issue any share created under the authority of this certificate nor shall any such share vest in the person or corporation accepting the same unless and until a sum not being less than one-fifth of the amount of such share is paid in respect thereof.

10. One-fifth of the amount of a share shall be the greatest amount of a call and three months at least shall be the interval between successive calls and three-fourths of the amount of a share shall be the utmost aggregate amount of the calls made in any year upon any share.

11. If any money is payable to a shareholder or mortgagee or debenture stockholder being a minor idiot or lunatic the receipt of the guardian or committee of his estate shall be a sufficient discharge to the Company.

12. The Company may create and issue debenture stock subject to the provisions of Part III of the Companies Clauses Act 1863 but notwithstanding anything therein contained the interest of all debenture stock and of all mortgages at any time created and issued or granted by the Company under this certificate or under any subsequent certificate or Act shall subject to the provisions of any subsequent certificate or Act rank *pari passu* without respect to the dates of the respective securities or of the Acts of Parliament or resolutions by which the stock and mortgages were authorised and shall have priority over all principal moneys secured by such mortgages. Notice of the effect of this enactment shall be endorsed on all mortgages and certificates of debenture stock.

13. The Company may from time to time borrow on mortgage of the undertaking any sum not exceeding in the whole ten thousand pounds but no part thereof shall be borrowed until the whole capital of thirty thousand pounds is issued and accepted and one-half thereof is paid up and the Company have proved to the justice who is to certify under the fortieth section of the Companies Clauses Consolidation Act 1845 (before he so certifies) that the whole of such capital has been issued and accepted and that one-half thereof has been paid up and that not less than one-fifth part of the amount of each separate share in such capital has been paid on account thereof before or at the time of the issue or acceptance thereof and that such capital was issued *bonâ fide* and is held by the persons or corporations to whom the same was issued or their executors administrators successors or assigns and that such persons or corporations their executors administrators successors or assigns are legally liable for the same and upon production to such justice of the books of the

Interpretation.

Company incorporated.

Power to make railway and works.

Gauge of railway and power to lay extra rail.

Railway to be a light railway 31 & 32 Vict. c. 119.

Capital.

Shares not to be issued until one-fifth paid.

Calls.

Receipt in case of persons not *sui juris*.

Debenture stock.

Power to borrow.

Company and of such other evidence as he shall think sufficient he shall grant a certificate that the proof aforesaid has been given which shall be sufficient evidence thereof.

For appointment of a receiver.

14. The mortgagees of the undertaking may enforce payment of arrears of interest or principal or principal and interest due on their mortgages by the appointment of a receiver. In order to authorise the appointment of a receiver in respect of arrears of principal the amount owing to the mortgagees by whom the application for a receiver is made shall not be less than one thousand pounds in the whole.

Application of moneys.

15. All moneys raised under this certificate whether by shares debenture stock or borrowing shall be applied only to the purposes of this certificate to which capital is properly applicable.

First ordinary meeting.

16. The first ordinary meeting of the Company shall be held within six months after the publication of this certificate.

Number of directors.

17. The number of directors shall be seven but the Company may from time to time reduce the number provided that the number be not less than three.

Qualification of directors.

18. The qualification of a director shall be the possession in his own right of not less than fifty shares.

Quorum.

19. The quorum of a meeting of directors shall be three but if the number shall be reduced to three the quorum shall be two.

First directors.

20. Charles Edward Morgan Charles Langley Whetham James Edward Hunter William Stephens Cross and Harry Emans Pollard and two other persons to be nominated by them or the majority of them and consenting to such nomination shall be the first directors of the Company and shall continue in office until the first ordinary meeting held after the publication of this certificate. At that meeting the shareholders present in person or by proxy may either continue in office the directors appointed by this certificate or nominated as aforesaid or any of them or may elect a new body of directors or directors to supply the places of those not continued in office the directors appointed by this certificate or nominated as aforesaid being if qualified eligible for re-election and at the first ordinary meeting to be held in every year after the first ordinary meeting the shareholders present in person or by proxy shall (subject to the powers hereinbefore contained for reducing the number of directors) elect persons to supply the places of the directors then retiring from office agreeably to the provisions of the Companies Clauses Consolidation Act 1845 and the several persons elected at any such meeting being neither removed nor disqualified nor having died or resigned shall continue to be directors until others are elected in their stead in manner provided by the same Act.

Lands for extraordinary purposes.

21. The Company may take by agreement for the extraordinary purposes mentioned in the Railways Clauses Consolidation Act 1845 any quantity of land not exceeding two acres but nothing in this certificate shall exempt the Company from any indictment action or other proceeding for nuisance in the event of any nuisance being caused by them upon any land taken under the powers of this section.

Power to cross certain roads on the level.

22. Subject to the provisions of the Railways Clauses Consolidation Act 1845 and in Part I (relating to the construction of a railway) of the Railways Clauses Act 1863 contained in reference to the crossing of roads on the level the Company may in the construction of the railway carry the same with a single line only whilst the railway shall consist of a single line and afterwards with a double line only across and on the level of the roads next hereinafter mentioned (that is to say) :--

No. on Deposited Plan.	Parish.	Description of Roads.
6	Alverstoke - -	Public road.
10	Ditto - -	Ditto.

Power to take easements by agreement.

23. Persons empowered by the Lands Clauses Consolidation Act 1845 to sell and convey or release lands may if they think fit subject to the provisions of that Act and of the Lands Clauses Consolidation Acts Amendment Act 1860 and of this certificate grant to the Company any easement right or privilege (not being an easement of water) required for the purposes of this certificate in over or affecting any such lands and the provisions of the said Acts with respect to lands and rentcharges so far as the same are applicable in this behalf shall extend and apply to such grants and to such easements rights and privileges as aforesaid respectively.

Power to enter into agreements.

24. The Company on the one hand and any person or persons or company or companies or either of them on the other hand may from time to time enter into and carry into effect and rescind contracts agreements and arrangements with respect to the working use management and maintenance of the railway or any part or parts thereof and the sidings tramways approaches junctions and other works and conveniences in connection with the railway and the works connected therewith and the conveyance of traffic thereon the supply of stock and plant necessary therefor and the employment of officers and servants for the conveyance and conduct of traffic

thereon the regulation collection transmission and delivery of the traffic thereon the payments to be made and the conditions to be performed with respect to the purposes aforesaid or any of them and the fixing collection and payment of the tolls rates income and profits arising in respect of traffic.

25. Subject and without prejudice to the provisions hereinafter contained the Company shall have power to lease the railway when completed to any person or company for any term of years and upon such conditions as may be agreed on and after the granting of any lease and possession taken by the lessee thereunder the Company shall except as by this certificate otherwise provided be free from all liability on account of the working of the railway and otherwise with reference thereto incurred subsequently to the time of possession having been so taken by such person or company and during the continuance of the lease the liability shall subject as aforesaid attach to and be borne by the lessee alone in like manner as the same would have attached to and been borne by the Company if the lease had never been made. Powers of leasing.

26. The Company shall have power to sell and convey to any person or company the railway and the undertaking and the whole lands property and works connected therewith or any part thereof or share therein. Power to sell railway.

27. If the railway is not completed within three years from the publication of this certificate then on the expiration of that period the powers by this certificate granted to the Company for making and completing the railway or otherwise in relation thereto shall cease except as to so much thereof as is then completed. Period for completion of works.

28. The Company may demand and take in respect of the use of the railway any tolls rates and charges not exceeding those set forth in the schedule to this certificate and except as otherwise expressly provided in this certificate the regulations contained in Part III of the schedule to "The Railways Construction Facilities Act 1864" shall be incorporated with and form part of this certificate and the said schedule thereto. Provided that for passengers animals and goods conveyed on the railway for a distance less than three miles charges are to be payable as for three miles. Tolls.

29. In addition to the tolls rates and charges by this certificate authorised the Company may demand and take a reasonable sum for the use of any warehouse or dépôt belonging to them. Charges for extra services.

30. Nothing contained in this certificate shall make it compulsory on the Company to carry on the railway any night soil dung manure or compost or other offensive matter. Not bound to carry manure.

31. The restrictions as to the charges to be made for passengers shall not extend to any special train run upon the railway in respect of which the Company may make such charges as they think fit but shall apply only to the ordinary trains appointed from time to time by the Company for the conveyance of passengers and goods upon the railway. Foregoing charges not to apply to special trains.

32. Nothing in this certificate shall prevent the Company from taking any increased charges over and above the charges by this certificate limited for the conveyance of animals or goods of any description by agreement with the owners or persons in charge thereof either by reason of any special service performed by the Company in relation thereto or in respect to the conveyance of animals or goods (other than small parcels) by passenger trains. Company may take increased charges by agreement.

33. Section 24 of the Railway and Canal Traffic Act 1888 and any Act of Parliament passed or to be passed extending or modifying that Act shall with any necessary modifications apply to the Company in all respects as if it were one of the companies to which the provisions of the said Act in terms applied. Provided that the time within which the revised schedule of maximum rates and charges prescribed by the said section shall be submitted to the Board of Trade shall be three years from the date of the issue of this certificate or such further time as the Board of Trade may permit. Application of provisions of Railway and Canal Traffic Act 1888 as to revision of rates.

34. Anything contained in any agreement made under the authority of this certificate shall not affect the rights of the Postmaster-General under the Telegraph Act 1878 to place and maintain telegraphic lines in under upon along over or across the railways and works comprised in the undertaking of the Company and from time to time to alter such telegraphic lines and to enter upon the land and works comprised in such undertaking for the purposes in the Telegraph Act 1878 specified and the Postmaster-General shall after the making of any such agreement be at liberty to exercise all the rights aforesaid notwithstanding that the undertaking of the Company is owned leased or worked by any one or more of the railway companies mentioned in section 9 or in the schedule of the Telegraph Act 1868 and as freely and fully in all respects as he was entitled to do before the making of any such agreement. Saving of rights of Postmaster-General.

35. All costs charges and expenses of and incident to the preparing for obtaining and publication of this certificate or otherwise in relation thereto shall be paid by the Company. Expenses of certificate.

(Signed) HENRY G. CALCRAFT,
Secretary to the Board of Trade.

The Board of Trade Whitehall
Dated this 14th day of April 1890.

The SCHEDULE referred to in the foregoing Certificate.

TOLLS AND CHARGES.

TABLE I.

Maximum Charges for Use of Railway and Supply of Carriages Wagons or Trucks.

	For Use of Railway per Mile.	For Supply of Carriage Wagon or Truck by the Proprietors of the railway (the additional sum per mile of).
<i>Passengers—</i>	<i>d.</i>	<i>d.</i>
For every person - - - - -	2	1
<i>Animals—</i>		
For every horse, ass, mule, or other beast of draught or burden (Class 1) -	2	1
For every ox, cow, bull, or head of neat cattle (Class 2) -	2	1
For every calf, pig, sheep, lamb, and other small animal (Class 3) -	$\frac{3}{4}$	$\frac{1}{4}$
<i>Goods (except as provided for in Table IV.)—</i>		
For cotton and other wools manufactured goods drugs fish and all other wares merchandise articles matters or things not enumerated in any other class (Class 4) per ton - - - - -	3	1
For sugar grain corn flour hides dyewoods earthenware timber staves deals and metals (except iron) nails anvils vices chains and light iron castings (Class 5) per ton - - - - -	$2\frac{1}{2}$	1
For coke charcoal pig iron bar iron rod iron sheet iron hoop iron plates of iron wrought iron heavy iron castings railway chains slabs billets and rolled iron lime bricks tiles slates salt fireclay and stone (Class 6) -	$1\frac{1}{2}$	1
For dung compost manure undressed material for repair of public roads or highways coals culm cinders cannel ironstone iron ore limestone clay (except fireclay) chalk sand and slag (Class 7) per ton - - - - -	$1\frac{1}{4}$	$\frac{1}{2}$
For every carriage of whatever description conveyed on a truck or platform belonging to the proprietors of the railway (Class 8) If not weighing more than one ton - - - - -	6	—
If weighing more than one ton then for the first ton - - - - -	6	—
And for every additional quarter of a ton or fractional part of a quarter of a ton above the first ton - - - - -	$1\frac{1}{2}$	—

TABLE II.

Maximum Charges for Supply of Locomotive Power.

For the use of engines for propelling carriages on the railway for every passenger animal and ton of goods . . per mile one penny.

TABLE III.

Maximum total charges for use of railway and supply of carriages waggons or trucks and supply of locomotive power and every other expense incidental to conveyance of passengers animals or goods along the railway.

	Per Mile.	
	s.	d.
<i>Passengers—</i>		
For every person conveyed in a first-class carriage - - - - -	—	0 3
" " " " " second-class carriage - - - - -	—	0 2
" " " " " third-class carriage - - - - -	—	0 1
<i>Animals—</i>		
For every animal in Class 1 - - - - -	—	0 4
" " " Class 2 - - - - -	—	0 3
" " " Class 3 - - - - -	—	0 $1\frac{1}{2}$
<i>Goods—</i>		
For everything in Class 4 - - - - - per ton	0	4
" " Class 5 - - - - -	0	3
" " Class 6 - - - - -	0	2
" " Class 7 - - - - -	0	$1\frac{1}{2}$
For every carriage in Class 8 per ton. The charge specified in Table I.		

TABLE IV.

Maximum Charges for Small Packages and Single Articles of Great Weight.

<i>Small packages—</i>						<i>s. d.</i>
For every parcel not exceeding 7 pounds in weight	-	-	-	-	-	0 3
" exceeding 7 pounds but not exceeding 14 pounds in weight	-	-	-	-	-	0 5
" " 14 " " 28 " "	-	-	-	-	-	0 7
" " 28 " " 56 " "	-	-	-	-	-	0 9
" " 56 " " 500 " "	-	-	-	-	for	
the first 56 pounds	-	-	-	-	-	1 0
and for every additional 56 pounds or fractional part of 56 pounds above the first	-	-	-	-	-	
56 pounds	-	-	-	-	-	0 6

Single Articles of Great Weight:—

For every boiler cylinder or single piece of machinery timber or stone or other single article—

If weighing (inclusive of the carriage) more than 4 but not more than 8 tons sixpence per ton per mile.

If weighing (inclusive of the carriage) more than 8 tons such sum as the proprietors of the railway think fit.

APPENDIX II.

Lambourn Valley Railway (Deviations).

Certificate of the Board of Trade to authorise the Lambourn Valley Railway Company to divert portions of their authorised Railway; and for other purposes.

WHEREAS the Lambourn Valley Railway Company have purchased or contracted for the purchase of the lands required for the Deviation Railways hereinafter described and approach roads in connection therewith and have complied with the requirements of the Railways Construction Facilities Act, 1864, and the Railways (Powers and Construction) Acts, 1864, Amendment Act, 1870.

Now, therefore, the Board of Trade do by this their Certificate, in pursuance of the said Acts, and by virtue and in exercise of the powers thereby in them vested, and of every other power enabling them in this behalf, certify as follows:—

Short Title.

1. This certificate may be cited as "The Lambourn Valley Railway (Deviations) Certificate, 1890."

Definition of Company.

2. In this certificate the expression "the Company" means the Lambourn Valley Railway Company.

Power to construct Railways.

3. Subject to the provisions of this certificate, the Company may, on the lands purchased or contracted to be purchased by them as aforesaid, make and maintain the deviation railways shown on the deposited plans and sections in the lines and according to the levels and within the limits of deviation shown on such plans and sections, with all proper stations, approaches, sidings, works, and conveniences connected therewith.

Description of Works.

The deviation railways and works authorised by this certificate will be situated in the county of Berks, and are as follows:—

- (1.) A Deviation Railway (No. 1) in the parish of Lambourn, commencing at or near the point marked, 4 furlongs on the centre line of railway shown on the plans referred to in the Lambourn Valley Railway Act, 1883, as having been deposited with the clerk of the peace for the county of Berks (hereinafter referred to as "the plans of 1883") and terminating at or near the point 1 mile 2 furlongs on the said centre line.
- (2.) A Deviation Railway (No. 2) commencing in the parish of Lambourn, at or near the point marked, 1 mile 4 furlongs on the centre line of railway shown on the plans of 1883, and terminating in the parish of East Garston, at or near the point marked 2 miles 7 furlongs on the said centre line.
- (3.) A Deviation Railway (No. 3) commencing in the parish of Boxford, at or near the point marked 8 miles on the said centre line as shown on the plans of 1883, and terminating in the parish of Speen, at or near the point marked 9 miles 3 furlongs on the same centre line of railway.
- (4.) A Deviation Railway (No. 4) commencing in the parish of Speen, at the point marked 11 miles on the centre line shown on the plans of 1883, and terminating in the parish of Newbury, at the point marked 12 miles on the same centre line of railway.

Inclination of Road.

4. In altering for the purposes of this certificate the road next hereinafter mentioned the Company may make the same of any inclination not steeper than the inclination hereinafter mentioned in connection therewith (that is to say):—

No. on Deposited Plans.	Parish.	Description of Road.	Intended Inclination.
15	Lambourn - -	Public - -	1 in 14

Height and Span of Bridges.

5. The Company may make the arches of the bridges for carrying the railway over the roads next hereinafter mentioned of any heights and spans not less than the heights and spans hereinafter mentioned in connection therewith respectively (that is to say):—

No. on Deposited Plans.	Parish.	Description of Road.	Height.	Span.
4	Lambourn - -	Public - -	15	20
15	Lambourn - -	Public - -	14	14
6	East Garston -	Public - -	15	20
2	Speen - -	Public - -	15	20

Time for Completion.

6. If the deviation railways are not completed within two years from the passing of this certificate then on the expiration of that period the powers by this certificate granted to the Company for making and completing those railways or otherwise in relation thereto shall cease to be exercised except as to so much thereof as is then completed.

Railway to be part of Railways of the Company.

7. The railways by this certificate authorized shall for the purposes of tolls and charges, and all purposes whatsoever, be part of the railway and undertaking of the Company.

Power to abandon part of authorized Railway.

8. The Company shall abandon the construction of so much of their railway authorized by the Lambourn Valley Railway Act, 1883, as was proposed to be situated between the respective points of commencement and termination of the deviation railways hereinbefore described.

Saving of Rights of Landowners to Damages for Entry.

9. The abandonment by the Company under the authority of this certificate of any portion of any railway or works shall not prejudice or affect the right of the owner or occupier of any land to receive compensation for any damage occasioned by the entry of the Company on such lands for the purpose of surveying and taking levels, or probing or boring, to ascertain the nature of the soil or setting out the line of railway, and shall not prejudice or affect the right of the owner or occupier of any land which may have been temporarily occupied by the Company to receive compensation for such temporary occupation, or for any loss, damage, or injury which may have been sustained by such owner or occupier by reason thereof, or of the exercise as regards such lands of any of the powers contained in the Railways Clauses Consolidation Act, 1845, or the Lambourn Valley Railway Acts, 1883 and 1888.

Compensation to Landowners on Abandonment.

10. Where before the passing of this certificate any contract may have been entered into or notice given by the Company for the purchasing of any land for the purposes of or in relation to any portion of the railway or works authorized to be abandoned by this certificate the Company shall be released from all liability to purchase or to complete the purchase of any such lands, but notwithstanding full compensation shall be made by the Company to the owners and occupiers or other persons interested in such lands for all injury or damage sustained by them respectively by reason of the purchase not being completed pursuant to the contract or notice, and the amount and application of the compensation shall be determined in manner provided by the Lands Clauses Consolidation Act, 1845, as amended by any subsequent Act for determining the amount and application of compensation paid for lands taken under the provisions thereof.

Short Distance Tolls and Charges.

11. During the continuance of any agreement to be entered into for the working or use of the railway, or any part thereof, the railway of the Company and the Great Western Railway shall for the purposes of short distance tolls and charges be considered as one railway, and in estimating the amount of tolls and charges in respect of traffic conveyed partly on the railway of the Company and partly on the Great Western Railway for a less distance than three miles, tolls and charges may only be charged as for three miles, and in respect of passengers, for every mile or fraction of a mile beyond three miles, tolls and charges as for one mile only, and in respect of animals and goods, for every quarter of a mile or fraction of a quarter of a mile beyond three miles, tolls and charges as for a quarter of a mile only, and no other short distance charge shall be made for the conveyance of passengers, animals, or goods partly on the railway of the Company, and partly on the Great Western Railway.

Company not exempted from general Acts.

12. Nothing in this certificate contained shall exempt the Company or the railway from the provisions of any general Act relating to railways, or the better and more impartial audit of the accounts of railway companies now in force, or which may hereafter pass during this or any future session of Parliament, or from any future revision or alteration under the authority of Parliament of the maximum rates of fares and charges, or of the rates for small parcels.

Costs of Certificate.

13. All costs, charges, and expenses of and incidental to the preparing for, obtaining, and passing of this certificate, or otherwise in relation thereto, shall be paid by the Company.

Dated this tenth day of June, one thousand eight hundred and ninety.

(Signed) HENRY G. CALCRAFT,
Secretary to Board of Trade.

Board of Trade, Whitehall.

RAILWAY CONSTRUCTION
FACILITIES ACT, 1864.

SESSION 1890.

REPORT by the Board of Trade on the
APPLICATIONS made during the Year 1889
under the RAILWAYS CONSTRUCTION FACILITIES
ACT, 1864, and of the PROCEEDINGS of the
BOARD OF TRADE with respect thereto.

(Presented pursuant to Act.)

Ordered, by The House of Commons, to be Printed,
1 July 1890.

Price 1½d.

TWENTY-SIXTH AND TWENTY-SEVENTH
QUARTERLY REPORTS OF INSPECTION

BY

MAJOR-GENERAL HUTCHINSON, R.E.,

AND

MAJOR MARINDIN, C.M.G., R.E.,

OF THE

WORKS IN PROGRESS FOR THE
CONSTRUCTION OF THE BRIDGE OVER
THE RIVER FORTH.

Presented to both Houses of Parliament by Command of Her Majesty.



LONDON:

PRINTED FOR HER MAJESTY'S STATIONERY OFFICE,

BY EYRE AND SPOTTISWOODE,

PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY.

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and 32, ABINGDON STREET, WESTMINSTER, S.W.; or
ADAM AND CHARLES BLACK, 6, NORTH BRIDGE, EDINBURGH; or
HODGES, FIGGIS, & Co., 104, GRAFTON STREET, DUBLIN.

1890.

FORTH BRIDGE RAILWAY.

TWENTY-SIXTH QUARTERLY REPORT of Inspection by Major-General Hutchinson, R.E., and Major Marindin, C.M.G., R.E., of the Works in progress for the Construction of the Bridge over the River Forth.

Railway Department, Board of Trade,
1, Whitehall, London, S.W.,

SIR,

31st August 1889.

WE have the honour to report, for the information of the Board of Trade, that, in compliance with the instructions contained in the order of the 26th October 1882, and in accordance with the provisions of the Forth Bridge Railway Act of 1882, we have made our twenty-sixth quarterly inspection of the works in progress for the construction of the bridge over the Firth of Forth at Queensferry.

The progress made during the past quarter is less than that recorded of late, but as the work is now approaching completion, the number of workmen has been gradually reduced and is now about 1,000 less than at the end of May.

Temporary Works.

No temporary works have been executed.

Permanent Works.

SOUTH QUEENSFERRY.

South Cantilever.—With the exception of the erection of the top members of the sixth bay, of the upper portion of the end box, and of some of the bracing, and of the riveting of about one half of the struts and ties of the sixth bay, the whole of this cantilever is completed.

North Cantilever.—The erection and riveting of this are practically complete.

The girders and troughs of the internal viaduct are built for 1,490 feet, and the wind fence and flooring are in place for 1,290 feet.

South Central Girder. South End.—With the exception of one half of the top member and of the bracing, the first bay is erected and the end post is riveted.

The riveted work at South Queensferry now amounts to about 15,300 tons, an addition of 1,350 tons during the quarter, as compared with 1,650 tons during the previous quarter.

INCH GARVIE.

South Cantilever.—This is practically completed.

North Cantilever.—With the exception of the riveting of portions of the struts and ties and of the bracing of the sixth bay, this is practically complete.

The girders and troughs of the internal viaduct are built for the whole length, and the flooring and wind fence are in place for about 1,320 feet.

South Central Girder. North End.—About one half of the first bay is built and the end post is riveted.

North Central Girder. South End.—This has just been commenced.

The total quantity of riveted steel work at Inch Garvie is about 17,550 tons, an addition of about 1,400 tons during the quarter, as compared with 1,950 tons in the previous quarter.

NORTH QUEENSFERRY.

South Cantilever.—This is practically completed.

North Cantilever.—The fourth bay is practically complete.

The building of the fifth bay is complete; one third of the top member and the lower portion of the ties remain to be riveted.

The bottom members of the sixth bay are nearly completed, one half of the ties and struts are built. The lower portion of the end box is built and riveted.

The girders and troughs of the internal viaduct are built for 1,490 feet, and the wind fence and flooring are in place for 1,170 feet.

North Central Girder. North End.—The end posts and one half of the bottom members and struts of the first bay are put together.

The total quantity of riveted steel work at North Queensferry is about 15,100 tons, an addition of about 1,250 tons during the quarter, as compared with 1,350 tons during the previous quarter.

General Remarks.

Steel Work.—With the exception of the wind fence and of a portion of the bracing and flooring, the whole of the steel for the central girders has been drilled and fitted.

A commencement has been made of the laying of the permanent way on the viaduct at South Queensferry.

The weather in June was very fine, but that in the last two months of the quarter has been very broken, rain having fallen to an unusually large amount.

The wind pressures recorded at Garvie Castle have been light, the highest being—

6 lbs. on the large gauge, July 10th, 1889.

8 " " small " August 18th, 1889.

8 " " revolving " " "

On the platform at the top of the west side of Inch Garvie pier the highest recorded pressure was 16 lbs.

The average number of men employed per diem during the quarter has been 2,293, and the number employed on August 24th was 2,023.

Only one fatal accident (and this we are informed was due to the workman's own want of caution) has occurred during the quarter.

In conclusion, we are again able to report that, so far as the recent quarterly inspection enables us to judge, the character and execution of the work continue to be of the same high standard as heretofore.

We have, &c.,

The Assistant Secretary,
Railway Department,
Board of Trade.

C. S. HUTCHINSON,
Major-General, R.E.,

F. A. MARINDIN,
Major, R.E.

TWENTY-SEVENTH QUARTERLY REPORT of Inspection by Major-General Hutchinson, R.E., and Major Marindin, C.M.G., R.E., of the Works in progress for the Construction of the Bridge over the River Forth.

Railway Department, Board of Trade,
1, Whitehall, London, S.W.,

30th November 1889.

SIR,

WE have the honour to report, for the information of the Board of Trade, that, in compliance with the instructions contained in the order of the 26th October 1882, and in accordance with the provisions of the Forth Bridge Railway Act of 1882, we have made our twenty-seventh quarterly inspection of the works for the construction of the bridge over the Firth of Forth at Queensferry, now nearly completed.

Both the central girders of the two large spans have been connected together during the last quarter, and the bridge can now be traversed from end to end.

All work of a temporary character has ceased, and the work done upon the permanent structure and its present state are briefly described below :—

SOUTH QUEENSFERRY.

South Cantilever.—The erection and riveting of this are practically completed.

North Cantilever.—The main members of this cantilever are complete, and with the exception of a few feet of the wind fence, and footpaths in bay 6, the whole of the internal viaduct is in place, and nearly the whole is riveted.

South Central Girder.—With the exception of the footpaths, and a few feet of the wind fence, the whole of this girder is erected, and very little of the riveting remains to be done.

The riveted work at South Queensferry now amounts to 15,900 tons, an addition of 600 tons during the quarter, as compared with 1,350 tons during the previous quarter, leaving 130 tons to be completed.

INCH GARVIE.

South Cantilever.—This is completed.

North Cantilever.—The whole of the main members are in place, and practically the whole are riveted, and with the exception of a small portion of the wind fence and footpaths of bay 6, the internal viaduct is completely built and riveted.

North Central Girder.—With the exception of the wind fence, footpaths, one-half of the flooring, and a small portion of the bracing, the whole of this girder is erected, and about three-fourths of it are riveted.

The total quantity of riveted steel work at Inch Garvie is 18,400 tons, an addition of 850 tons during the quarter, as compared with 1,400 tons during the previous quarter, leaving 320 tons to be completed.

NORTH QUEENSFERRY.

South Cantilever.—This is completed.

North Cantilever.—With the exception of the bracing between the struts in bay 6, the whole of the main members are erected, and very little of the riveting remains to be done.

The flooring of bay 6 of the north cantilever, and the footpaths, and wind fence of bay 6 of both cantilevers are unfinished, but with these exceptions the whole of the internal viaduct is erected, and nearly the whole is riveted.

The total quantity of riveted steel work at North Queensferry, is about 15,750 tons, an addition of 650 tons during the quarter, as compared with 1,250 tons during the previous quarter, leaving 280 tons to be completed.

PERMANENT WAY.

South Approach Viaduct.—All the longitudinal sleepers are in place, and the rails laid and nearly all screwed down.

South Queensferry.—The teak and pine blocks in the troughs under the sleepers are laid from the end of bay 5, south to the end of bay 4, north cantilever, and about 200 feet of the sleepers are laid.

Inch Garvie.—The teak and pine blocks are laid from the end of bay 4 south, to the end of bay 4, north cantilever.

North Queensferry.—The teak and pine blocks are laid from the end of bay 3 south, to the middle of bay 4, north cantilever, and the longitudinal sleepers are laid from the vertical columns to the end of bay 3, on the south cantilever.

North Approach Viaduct.—With the exception of a length of 80 feet, all the sleepers are in place, and the rails, except for a length of 160 feet, are laid, but not screwed down.

General Remarks.

Steel Work.—With the exception of that, for the footpaths, and the wind fence for the north central girder, the whole of the steel for the bridge has been drilled and fitted.

Masonry.—The coping of the cantilever piers is all that remains unfinished.

Weather.—The weather during the past quarter has, on the whole, been very favourable considering the season of the year.

The highest wind pressures recorded at Garvie Castle were on November 2nd, 1889, when the large gauge showed a pressure of 12 lbs., the small gauge a pressure of 34 lbs., and the revolving gauge a pressure of 27 lbs.

The average number of men employed per diem during the quarter has been 1,795, and the number employed on November 23rd was 1,585.

We regret to have to report that, even with this reduced number of workmen, there have been four fatal accidents, one of which, on September 12th, when a riveter, John Aitkin, aged 16, was killed, was due apparently to carelessness in the fixing of a stage upon which he was working. Two others, on the 18th and 24th September, are stated to have been due to the falling of pieces of wood from a height, which should not occur if proper care be taken. In the fourth case a rigger unfortunately lost his balance and fell into the water, receiving fatal injuries.

The result of measurements taken on November 26th shows that under the central girders there is a clear headway in no case less than 1 ft. 1 in. above that specified in section 5 of the Forth Bridge Act.

In conclusion, we can state that, so far as it is possible to judge from a periodical inspection, the high character of the work is being maintained to the end.

The Assistant Secretary,
Railway Department,
Board of Trade.

We have, &c.,

C. S. HUTCHINSON,
Major-General, R.E.,

F. A. MARINDIN,
Major, R.E.

FORTH BRIDGE RAILWAY.

TWENTY-EIGHTH AND FINAL QUARTERLY
REPORT OF INSPECTION

BY

MAJOR-GENERAL HUTCHINSON, R.E.,

AND

MAJOR MARINDIN, C.M.G., R.E.,

OF THE

BRIDGE OVER THE RIVER FORTH.

Presented to both Houses of Parliament by Command of Her Majesty.



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HODGES, FIGGIS, & Co., 104, GRAFTON STREET, DUBLIN.

1890.

FORTH BRIDGE RAILWAY.

TWENTY-EIGHTH and FINAL QUARTERLY REPORT of Inspection by Major-General Hutchinson, R.E., and Major Marindin, C.M.G., R.E., of the Bridge over the River Forth.

Railway Department, Board of Trade,
Whitehall, London, S.W.,

SIR,

24th February, 1890.

WE have the honour to report, for the information of the Board of Trade, that, in compliance with the instructions contained in your Minutes of the 26th October 1882 and 4th February 1890, and in accordance with the provisions of the Forth Bridge Railway Act of 1882, we have made our twenty-eighth and final inspection of the bridge over the Firth of Forth at Queensferry, which was commenced in April 1883, and has just been completed.

The bridge, with its approach viaducts, has a total length of 8,295 ft. 9 ins., and there are two spans of 1,710 feet, two of 680 ft. 6 ins., fifteen of 160 feet, four of 57 feet, and three of 25 feet.

The approach viaduct at the south end, which is 1,993 ft. 8 ins. in length, has four masonry arches of 57 feet span, and ten spans of 160 feet with steel lattice girders upon piers of granite, with concrete and rubble masonry backing. These piers have concrete foundations upon boulder clay or hard sandstone rock, and the highest of them has a height of 139 feet above ground level.

The approach viaduct at the north end, which is 980 ft. 5 ins. in length, has three masonry arches of 25 feet span, and five spans of 160 feet, with steel lattice girders upon piers, similar to those of the south approach viaduct. These piers have concrete foundations on greenstone rock, and the highest of them has a height of 130 feet above ground level.

The bridge proper, which is 5,321 ft. 8 ins. in length, has two spans of 1,710 feet over the two deep water channels, one on each side of Inch Garvie, and two spans of 680 ft. 6 ins., that at the south end being over shallower water, and that at the north end over dry land at North Queensferry.

The superstructure of these four main spans is composed of three great double cantilevers, built entirely of steel, the central or Inch Garvie double cantilever having a length of 1,627 ft. 8 ins., and the South Queensferry and North Queensferry (or Fife) double cantilevers having each a length of 1,513 ft. 9 ins.

The intervals of 346 ft. 6 ins. between the north end of the South Queensferry cantilever and the south end of the Inch Garvie cantilever, and between the north end of the Inch Garvie cantilever and the south end of the North Queensferry cantilever, are each spanned by lattice girders, 350 feet in length, and 50 feet in depth at their centres, supported by the ends of the cantilever arms.

The compression members of the cantilevers are, as a rule, tubular, the principal ones having a diameter of 12 feet, and the tension members are mostly lattice girders.

Each of the cantilevers rests upon a group of four low piers, built of masonry faced with granite, 49 feet in diameter (except the two north piers at North Queensferry, which are 45 feet in diameter), having their tops 18 feet above high-water mark. These piers are founded upon solid rock, or on concrete built up either from the solid rock or from a stratum of very hard boulder clay. They are arranged in pairs, 120 feet apart from centre to centre transversely across the bridge, and the north and south pairs are 270 feet apart from centre to centre at Inch Garvie, and 155 feet apart at South and North Queensferry.

The south end of the southern cantilever and the north end of the northern cantilever rest upon granite piers, which also carry the ends of the adjacent girders of the two approach viaducts.

The four South Queensferry main piers are founded upon the boulder clay underlying the bed of the Firth upon the south shore, into which clay they are sunk to depths varying from $30\frac{1}{2}$ feet to 45 feet, and their bases stand at levels varying from 44 feet to 90 feet below high-water mark.

The four Inch Garvie main piers are founded under water upon greenstone rock, their bases standing at levels varying from 26 feet to 72 feet below high-water mark.

Of the four North Queensferry main piers two only are in the water, with their bases respectively 19 feet and 24 feet below high-water mark, the other two being upon dry land. The whole of them are founded upon greenstone rock.

The two cantilever piers are built of granite with rubble masonry backing; that at South Queensferry is upon the foreshore, and is founded upon boulder clay, at a level of 34 feet below high-water mark, and that at North Queensferry is upon dry land, and is founded upon greenstone rock. The top of the former is 230 ft. 3 ins. above ground level, and 208 ft. 9 ins. above high-water mark, and that of the latter is 181 feet above ground level.

The foundations of all the piers are excellent, and the whole of the masonry is of a very superior quality.

The deepest foundation, that of South Queensferry north-east pier, is 90 feet below high-water mark, and the extreme height of the central portions of the three double cantilevers is 343 feet above the top of the piers, and 361 feet above high-water mark. The headway in the channels below the main spans is somewhat in excess of that required by section 5 of the Forth Bridge Railway Act, the actual minimum at high-water spring tides being as follows:—

		Ft.	ins.
For	500 feet	150	$10\frac{3}{4}$
"	900 "	128	8
"	1,100 "	108	9

The headway prescribed in the Act for these spaces is 150 feet, 125 feet, and 100 feet.

The permanent way, which is for a double line, is on the cantilevers carried upon an internal viaduct supported by trestles resting upon the bottom members; at the central portions of the main spans it is placed between the girders, and upon the approach viaducts it is above the main girders. It is throughout laid in longitudinal steel troughs, resting upon cross girders, and acting as rail guards.

The rails are made of Siemens-Martin steel, and of a bridge form. They are in 28 feet lengths, and weigh 121 lbs. per yard; their ends being connected by joint plates 26 inches in length. They are secured to the sleepers by wood screws, of which there are four at each joint in each rail, and 12 others placed two feet apart on alternate sides. The longitudinal sleepers are of Rangoon teak, 12 inches wide and 6 inches deep, bedded upon and secured to cross-bearers of teak, the spaces between which are filled in with creosoted pitch pine. Between the sides of the steel troughs and the longitudinals, teak wedges on the inside, and packing on the outside, have been inserted at every bearer.

The floor of the bridge is composed of steel buckle-plates, upon which a coating of gravel ballast is laid.

Proper and sufficient provision has been made for expansion and contraction both of the rails and of the main members of the bridge.

The whole of the superstructure of the bridge and viaducts, with the exception of the seven masonry arches, is composed of open-hearth or Siemens-Martin steel, which by the specification had to satisfy the following tests: Strips cut lengthwise or cross-wise to have an ultimate tensile strength of not less than 30 tons, and not exceeding 33 tons per square inch of section, with an elongation of at least 20 per cent. on a length of 8 inches for all steel subject to tensile stresses; and of not less than 34 tons nor exceeding 37 tons, with an elongation of at least 17 per cent. for all steel subject only to compression.

Strips cut crosswise or lengthwise $1\frac{1}{2}$ inches wide, heated uniformly to a low cherry red, and cooled in water of 82° Fahrenheit, to stand bending double in a press to a curve of which the inner radius is one-and-a-half times the thickness of the steel tested.

The requisite certificate, signed by the engineers, that these tests have been carried out is attached.

Under the authority of the Board of Trade, dated December 9th, 1881, R. 11,469

81 the bridge has been made of dimensions calculated to withstand a strain due to a rolling load of two trains of 50 loaded trucks drawn by two engines, giving a total weight for each train of 892 tons, and to a wind pressure of 56 lbs. to the square foot. Under the combined strains arising from these, and from the dead load, the steel, being of special quality, was authorised to be subjected to a stress of $8\frac{1}{2}$ tons per square inch when in compression, and $7\frac{1}{2}$ tons when in tension.

The stresses on the bridge, as constructed, have been carefully calculated, and are, as a rule, considerably below these amounts, in no case exceeding 7.6 tons in compression, and 6.9 tons in tension, in the cantilevers; and 6 tons in compression, and 7.3 tons in tension, in the central girders.

The weight of steel actually used is 50,958 tons upon the main spans, and 3,118 tons upon the approach viaduct girders, making a total of 54,076 tons, of which 53,716 tons are riveted work.

The amount of masonry and concrete work is as follows:—

Granite, 640,300 cubic feet.

Concrete, 64,315 cubic yards.

Rubble masonry, 62,250 cubic yards.

At this, our final inspection, we have subjected every part of the bridge to severe tests, by running over it, and placing upon it, in various positions, two heavy trains, each made up as follows:—

	Tons.
Two engines and tenders (in front), each weighing 73 tons	146
Forty-four trucks loaded with iron, each 15 tons 10 cwt. gross weight	682
One engine and tender in rear	73
Total	901 Tons

Each of these trains covered a length of 896 ft. 5 in.

We have observed the deflections upon the main members, and other parts of the structure, and these have in all cases been smaller than might have been expected.

With the loads in positions calculated to produce the maximum deflections, these in no case exceeded 7.65 inches at the ends of the cantilevers.

The deflections of the central girders, when loaded so as to produce the greatest effect, did not exceed 1.58 inches.

The deflections of the internal viaduct girders, approach viaduct girders, and cross girders were of a very moderate amount.

Careful observations were made to test the rigidity of the vertical members over the cantilever piers, and under the influence of the above heavy live loads the movements were very small, the "pull over" in the direction of the length of the bridge in no case exceeding 2 inches at the top of the vertical columns. There appeared to be no appreciable movement of the top of these columns in a direction at right angles to the length of the bridge.

These results are most satisfactory, and, taken in conjunction with the theoretical strength according to the calculations and with the remarkable absence of vibration when the trains were running at considerable speed, prove that the bridge is one of exceptional strength and stability.

We are therefore able to report that the Forth Bridge may be safely opened for passenger traffic as soon as the approach railways have been completed.

The greatest wind pressures during the last quarter were registered on January 26th, 1890, and were as follows:—

On the large gauge at Garvie Castle, 18 lbs. per square foot.

On the small fixed gauge at Garvie Castle, 34 lbs. per square foot.

On the revolving gauge at Garvie Castle, 27 lbs. per square foot.

At the time of this gale the bridge was virtually completed, and the effect upon the structure is stated to have been no greater than would, according to calculation, be caused by a pressure of 10 lbs. per square foot over the

whole surface. The maximum pressures during the progress of the work, of which there is a reliable record, were on the 16th November 1888, when the three gauges above mentioned showed pressures of 27 lbs., 41 lbs., and 35 lbs. respectively.

The total number of fatal accidents during the seven years which the bridge has occupied in construction has been 56. Although this loss of life is greatly to be deplored, the fact that it has not been larger on a work of such magnitude, with so large a number of men employed in dangerous positions, shows that no reasonable precautions for their safety have been omitted.

In conclusion we think it right to record our opinion that this great undertaking, every part of which we have seen at different stages of its construction, is a wonderful example of thoroughly good workmanship with excellent materials, and that both in its conception and in its execution it is a credit to all who have been connected with it, bearing testimony to the ability of the engineers who have designed it, to the skill and resource of those who have superintended and constructed it, and to the zeal and courage of the workmen who have been employed upon it.

We have, &c.,

The Assistant Secretary,
Railway Department.
Board of Trade.

C. S. HUTCHINSON,
Major-General, R.E.,

F. A. MARINDIN,
Major, R.E.

APPENDIX.

FORTH BRIDGE.—STEELWORK.

We hereby certify that the whole of the steel used in the Forth Bridge has been made on the Siemens-Martin "open hearth" system, and has been subjected to the following specified tests:—

Strips cut lengthwise or crosswise to have an ultimate tensile strength of not less than 30 tons and not exceeding 33 tons per square inch of section, with an elongation of at least 20 per cent. in a length of 8 inches for all steel subject to tensile stresses, and of not less than 34 tons nor exceeding 37 tons, with an elongation of at least 17 per cent. for all steel subject only to compression.

Strips cut crosswise or lengthwise $1\frac{1}{2}$ inches wide, heated uniformly to a low cherry red and cooled in water of 82° Fahrenheit, must stand bending double in a press to a curve of which the inner radius is one and a half times the thickness of the steel tested.

The results of the many thousands of tests made showed the steel to be possessed of toughness and ductility considerably in excess of the specified requirements.

February 14th, 1890.

FOWLER AND BAKER.

RAILWAY, &c. BILLS.

RETURN to an Order of the Honourable The House of Commons.
dated 14 February 1890;—*for*,

COPY

OF

R E P O R T

BY THE BOARD OF TRADE

UPON ALL THE

RAILWAY, CANAL, TRAMWAY, GAS, ELECTRIC LIGHTING,
AND WATER BILLS

OF

SESSION 1890.

(*Sir Michael Hicks Beach.*)

Ordered, by The House of Commons, to be Printed,
14 February 1890.

LONDON:
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and HODGES, FIGGIS, and Co., 104, Grafton-street, Dublin.

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REPORT OF THE BOARD OF TRADE ON THE RAILWAY, CANAL, TRAMWAY, GAS, AND WATER BILLS OF 1890.

THE total number of Bills deposited for the Session of 1890, which relate to RAILWAYS, CANALS, TRAMWAYS, and the Supply of GAS, ELECTRIC LIGHTING, and WATER, amounts to 173, against 158 of the Session of 1889; the total amount of money proposed to be raised is 40,106,611 £., against 25,613,455 £., an increase of 14,493,156 £.

RAILWAYS AND CANALS.

The Number of Bills which relate to RAILWAYS and CANALS amounts to 114, of which Number 63 propose to authorise the Construction of New Railways or Additional Railway Works.

	NUMBER OF BILLS.	LENGTH OF NEW LINE.	PROPOSED CAPITAL.		
			By Shares.	By Loan.	TOTAL.
I. PROMOTED BY EXISTING COMPANIES:		<i>Miles.</i>	£.	£.	£.
ENGLAND - - - - -	69	260	10,867,000	3,704,325	14,571,325
SCOTLAND - - - - -	15	139	2,121,000	673,666	2,794,666
IRELAND - - - - -	7	-	20,000	415,000	435,000
TOTAL - - - - -	91*	399	13,008,000	4,792,991	17,800,991
II. PROMOTED BY NEW COMPANIES:					
ENGLAND - - - - -	13	156	10,075,000	3,336,594	13,411,594
SCOTLAND - - - - -	9	145	1,952,500	588,266	2,540,766
IRELAND - - - - -	1	75	950,000	475,000	1,425,000
TOTAL - - - - -	23	376	12,977,500	4,399,860	17,377,360
TOTAL for RAILWAYS and CANALS - - -	114	775	25,985,500	9,192,851	35,178,351

TRAMWAYS, &c.

The Number of Bills which relate to TRAMWAYS and TRAMROADS amounts to 19.

ENGLAND - - - - -	17	32	468,000	185,250	653,250
SCOTLAND - - - - -	1	-	-	-	-
IRELAND - - - - -	1	6	-	-	-
TOTAL for TRAMWAYS - - -	19	38	468,000	185,250	653,250

GAS.

The Number of Bills which relate to the Supply of GAS amounts to 11.†

ENGLAND - - - - -	9	-	360,000	93,750	453,750
SCOTLAND - - - - -	2	-	70,000	64,510	134,510
IRELAND - - - - -	-	-	-	-	-
TOTAL for GAS - - -	11	-	430,000	158,260	588,260

ELECTRIC LIGHTING BILLS.

The Number of Bills which relate to ELECTRIC LIGHTING amounts to 8.

ENGLAND - - - - -	6	-	-	20,000	20,000
SCOTLAND - - - - -	2	-	-	50,000	50,000
IRELAND - - - - -	-	-	-	-	-
TOTAL for ELECTRIC LIGHTING - - -	8	-	-	70,000	70,000

WATER.

The Number of Bills which relate to the Supply of WATER amounts to 21.

ENGLAND - - - - -	20	-	457,560	3,044,190	3,501,750
SCOTLAND - - - - -	1	-	92,000	23,000	115,000
IRELAND - - - - -	-	-	-	-	-
TOTAL for WATER - - -	21	-	549,560	3,067,190	3,616,750

GENERAL TOTAL for RAILWAYS, CANALS, TRAMWAYS, SUBWAYS, GAS, and WATER - - -	173	{ Railway 775 Tramway 38 }	27,433,060	12,673,551	40,106,611
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* Includes Subway Railways.

† Three of these Bills also contain provisions relating to the Supply of Water, and two relate to Electric Light.

PROVISIONAL ORDERS.

THE Number of Applications made to the Board of Trade for Provisional Orders relating to TRAMWAYS, and the Supply of GAS and WATER, and ELECTRIC LIGHTING, amounts to 196.

	NUMBER OF APPLICATIONS.	PROPOSED CAPITAL (ESTIMATE).	LENGTH OF ROAD FOR WHICH TRAMWAY IS PROPOSED.	REMARKS.
ENGLAND AND WALES:				
TRAMWAYS - - - - -	13	£. * 97,455	(double line) 3½ miles (single line) 15 miles	* Estimate of ex- pense of con- struction.
GAS - - - - -	13	132,125	—	
WATER - - - - -	8	127,750	—	
GAS and WATER - - - - -	1	25,000	—	
TOTAL, GAS and WATER - - -	22	284,875	—	
ENGLAND, SCOTLAND, AND IRELAND:				
ELECTRIC LIGHTING - - - -	161	9,242,828	—	
GENERAL TOTAL for TRAMWAYS, GAS and WATER and ELECTRIC LIGHTING Provisional Orders -	196	9,625,158	(double line) 3½ miles (single line) 15 miles.	

GENERAL REMARKS.

A REFERENCE to the Table on page 3 of this Report will show that the number of Bills for new railways or for the improvement of existing railways, for new street tramways, for the further supply of gas and for electric lighting, is in the aggregate larger than that of last Session.

RAILWAY BILLS.

The Bills of existing railway companies number 91, against 73 of the last Session; the new lines proposed show a length of 399 miles as against 223 miles, and the amount of new capital proposed to be raised is 17,800,991 *l.*, against 10,774,406 *l.*

The Bills of new railway companies number 23, against 19 of the past Session; the new lines proposed show a length of 376 miles against 331 miles, and the amount of capital proposed to be raised is 17,377,360 *l.*, against 10,141,966 *l.*

Combining the existing and new railway companies, their Bills number 114, against 92, the length of new lines 775 miles, against 554 miles, and the amount of capital to be raised 35,178,351 *l.*, against 20,916,372 *l.*, or an increase of 221 miles, and an increase of 14,261,979 *l.* capital.

In seven of the Bills the companies apply for authority to abandon the whole of their authorised railways, namely:—

The Burnley, Clitheroe, and Sabdon Bill.

The Holsworthy and Tude Railway Bill.

The Hull and North Western Junction Railway Bill.

The Llangammarch and Neath and Brecon Junction Railway Bill.

The Porthdinlleyn Railway Bill.

The Regent's Canal City and Docks Railway Bill.

The Columbia Market and Railways Abandonment Bill.

In many cases the companies apply for revival of powers, or for an extension of the periods limited for the compulsory purchase of lands or the completion of their undertakings.

Twenty Bills apply for authority to pay interest out of capital to the shareholders during the period limited for the construction of the railways.

The Bills promoting subway railways in the metropolis and suburbs (see page 7), and one at Glasgow, propose to work them by electricity or other mechanical power.

Two Bills, one promoted by the Caledonian Railway Company, and one by the North British Railway Company, seek authority for the acquisition, by amalgamation or otherwise, of the undertaking of the Glasgow and South Western Railway Company.

Other Bills seek authority for the amalgamation or for the absorption, by sale, lease, or transfer of the undertakings of certain minor companies.

A reference to these Bills is made under the head of "Amalgamation," at page 58.

The amount of additional capital proposed to be raised by the Bills of existing Railway Companies for the construction of new Railways, and for other purposes in connection with their undertakings, where the amount is of or above 100,000 £., is given in the following Table.

NAME OF RAILWAY COMPANY.	Amount of Share and Loan Capital sought by the Bills of Session 1890.
<i>Existing Companies whose Lines are Open for Traffic.</i>	
	£.
Midland	2,000,000 800,000
Great Eastern	1,600,000 165,000
Caledonian	400,000 1,000,000
Great Northern	1,333,000
Lancashire and Yorkshire	1,320,000
Metropolitan	800,000
Barry Docks and Railway	740,000
London and South Western	666,665
Great Western	666,000
Great North of Scotland	648,000
London, Chatham, and Dover	600,000
North Eastern	533,000
Beverley and East Riding	400,000
Bute Docks, Cardiff	400,000
London, Brighton, and South Coast	400,000
Taff Vale	400,000
Alexandra (Newport and South Wales) Docks and Railway	320,000
Forth Bridge	266,000
Manchester, Sheffield, and Lincolnshire	260,000
City of London and Southwark Subway (Clapham Extension)	250,000
Seacombe, Hoylake, and Deeside	240,000
Guisley, Yeadon, and Rawdon	224,000
Great Southern and Western	200,000
Kirkcaldy and District	200,000
North British	112,000
The remaining Bills by existing Companies propose to raise further sums, amounting in the aggregate to	857,326
Making a Total to be raised by EXISTING Companies of	£. 17,800,991

PROPOSED NEW RAILWAYS.

The most important of the proposed railways may be summarised as follows, namely :—

IN ENGLAND AND WALES.

London and the Suburbs

The Central London Railway Bill proposes the construction of underground railways, 4 miles 54 chains in length, passing in tunnel under the Bayswater-road and Oxford-street to King William-street in the City, and to a junction with the London and Southwark Subway. Railways to be worked by electricity, or by other means than steam locomotives.

The City of London and Southwark Subway (Clapham Extension, &c.) Bill proposes the construction of an extension of their authorised subway, 79 chains in length, to Clapham.

The Kensington and Paddington (Subway) Railway Bill proposes the construction of (subway) railways, 1 mile 50 chains in length, between South Kensington and Paddington, passing *en route* under Exhibition-road, Kensington Gardens, and the Grand Junction-road. The railway to be worked by electricity.

The London Central (Subway) Railway Bill proposes the construction of (subway) railways, 4 miles 10 chains in length, between Shepherd's Bush Common and Tottenham Court-road, to pass in covered way under Uxbridge-road and Oxford street. The railway to be worked by electricity.

The North and South London Subway Railway Bill proposes the construction of (subway) railways, 5 miles 39 chains in length, between Kentish Town and Lambeth, passing under Kentish Town-road, Hampstead-road, Tottenham Court-road, Charing Cross-road, Whitehall, Parliament-street, and Abingdon-street; thence under the Thames and under Lambeth-road and St. George's-road. The railway to be worked by electricity.

In other Districts.

The Croydon and Crystal Palace Railway Bill proposes the construction of a railway, $3\frac{1}{4}$ miles in length, from the Crystal Palace High Level Station to the West Croydon Station.

The East Gloucestershire Railway Bill proposes the construction of a railway, $7\frac{1}{2}$ miles in length, from the Fairford Station to the Cerney Station of the Midland and South Western Junction Railway.

The Great Western Railway Bill proposes the construction of short railways, together 14 miles in length, between the Avonmouth Dock and the Bristol and South Wales Union Railway, and between Urchfont and East-Coulston.

The Beverley and East Riding Railway Bill proposes extensions, together 18 miles in length, of the authorised railway to Bridlington, and to the Hull and Barnsley Railway at Little Weighton.

The Guisley, Yeadon, and Rawdon Railway Bill proposes an extension, 4 miles in length, of their railway to Horsforth.

The Houghton-le-Spring Railway Bill proposes the construction of a railway, 3 miles in length, from the North Eastern Railway.

The South Yorkshire Junction Railway Bill proposes the construction of railways, together 35 miles in length, from Wath to Denaby and Thorne, from Wrangbrook to Black Carr Junction, and from Cadsby to Conisbrough.

The London and North Western Railway Bill proposes to make new railways and branch lines, together 33 miles in length, at various places, and new deviation lines, together 10 miles in length.

The North West Central Railway Bill proposes the construction of new railways, together 47 miles in length, extending from Preston, and passing by Ribchester, Whalley, Salford, and Colne to Keighley, and junctions with the several railways *en route*.

The Beddgelert and Rhyd-ddu Railway Bill proposes the making of a railway, 9 miles in length, in connection with the North Wales Narrow Gauge Railway.

The Birmingham, Kidderminster, and Stoke Railway Bill proposes the construction of railways, together 29 miles in length, from Kidderminster to the Midland Railway at Edgbaston, branches to the Harborne Branch, to the Midland Railway at Stoke, and from Kidderminster to Stourport.

The Hitchin Western Railway Bill proposes the construction of a railway, $6\frac{1}{2}$ miles in length, from Hitchin to Lilley.

The Metropolitan Railway Bill proposes the construction of railways, together 32 miles in length, from Aylesbury to Quainton.

The Midland Railway Bill proposes the construction of short branch railways, together 10 miles in length.

The Midland Railway Bill (Shireoaks, Conisbrough, and Swinton Railways) proposes the construction of new railways, together 20 miles in length.

The Alexandra (Newport and South Wales) Docks and Railway Bill proposes the construction of extension railways, 14 miles in length.

The Barry Docks and Railways Bill proposes the construction of new railways, together 15 miles in length, to Cardiff, and to join the Rhymney Railway.

The Rhondda and Swansea Bay Railway Bill proposes to construct short railways and a quay at Port Talbot.

The Rhymney Railway Bill proposes to construct extension railways, together $4\frac{1}{2}$ miles in length.

The Taff Vale Railway Bill proposes to construct extension and branch railways, together 10 miles in length.

The Manchester, Sheffield, and Lincolnshire Railway Bill proposes the construction of a branch railway at Conisbrough, and railways at Handsworth and Chesterfield, together 19 miles in length.

The Tottenham and Forest Gate Railway Bill proposes the construction of a railway, 6 miles in length, from the Tottenham and Hampstead Junction Railway, near South Tottenham Station, to a junction at East Ham, with the Forest Gate Branch of the London, Tilbury, and Southend Railway.

SCOTLAND (North).

The Brechin and Edzell District Railway Bill proposes the construction of a railway, 6 miles in length, from the Brechin Branch of the Caledonian Railway to the village of Edzell.

The Forfar, Brechin, and Edzell Railway Bill proposes the construction of railways, together $19\frac{1}{4}$ miles in length, from the Caledonian Railway at Forfar to the village of Edzell, and to the Brechin Branch of that railway.

The Forfar and Brechin Railway Bill proposes the construction of railways, together 15 miles in length, from the Caledonian Railway at Forfar to Brechin.

The Crieff and Comrie Railway Bill proposes the construction of a railway, 6 miles in length, from the Crieff Branch of the Caledonian Railway to the village of Comrie.

The Garve and Ullapool Railway proposes the construction of a railway, $33\frac{3}{4}$ miles in length, from the Garve Station on the Dingwall and Skye Section of the Highland Railway to Ullapool.

The Great North of Scotland Railway Bill proposes the construction of extension railways, together 66 miles in length, between Elgin and Inverness, between Kilmorack and Fortrose on the Moray Firth, and between Elgin and Burghead.

The Highland Railway Bill proposes the construction of branch lines between Kilmorack and Rosemarkie, a branch line from near Cambelltown to the Moray Firth, and extensions of the Burghead Branch, altogether 22 miles in length.

The Kircaldy and District Railway Extensions Bill proposes the construction of extension railways, $12\frac{1}{4}$ miles in length.

SCOTLAND (South).

The Ballantrae Railway Bill proposes the construction of a railway, $8\frac{1}{2}$ miles in length, from the Ayrshire and Wigtonshire Railway to Ballantrae.

The Caledonian Railway (Additional Powers) Bill proposes the construction of branch railways, together 11 miles in length.

The Caledonian Railway (Edinburgh, Leith, and Newhaven Connecting Lines) Bill proposes the construction of new connecting lines, together $6\frac{1}{4}$ miles in length.

The Glasgow District Subways Bill proposes the construction of subways, together $6\frac{1}{2}$ miles in length; the carriages to be drawn or propelled by means of stationary engines, and rope or cable haulage, or by other means than steam locomotives.

The Lanarkshire and Dumbartonshire Railway Bill proposes the construction of railways, together $22\frac{3}{4}$ miles in length, from the Caledonian Railway near Glasgow to Dumbarton and Balloch, with subsidiary lines, and a pier on Loch Lomond.

The Milngavie, Strathendrick, and Port of Monteith Railway Bill proposes the construction of railways, together 27 miles in length, from the Caledonian and North British Railways to Milngavie and Killeary.

The West Highland Railway Bill proposes the construction of deviations in the line of the authorised railway, together 13 miles in length, and certain new branch railways, together $2\frac{1}{2}$ miles in length.

IRELAND.

The Cork, Fermoy, and Waterford and Wexford Railway Bill proposes the construction of railways, together 75 miles in length.

TRAMWAY AND TRAMROAD BILLS.

Nineteen Bills relate to Tramways or Tramroads, and together propose the construction of 21 miles of Tramway and 17 miles of Tramroad, and the raising sums of money amounting in the aggregate to 653,250 *l.* As compared with 1889 the number of Bills shows a decrease of two, and the capital proposed a decrease of 949,380 *l.*

Seventeen of these Bills relate to Tramways in England, one to Tramways in Scotland, and one to Tramways in Ireland.

An Analysis of these Tramway Bills will be found at page 34.

GAS, ELECTRIC LIGHTING, AND WATER BILLS.

Of the 40 Bills, six relate to the supply of Gas, two to Gas and Electric Lighting, eight to Electric Lighting only, three to the supply of Gas and Water, and 21 to the supply of Water only.

The total capital proposed to be raised by these 40 Bills amounts to 4,275,010 *l.*, or 1,257,552 *l.* more than in 1889.

The Analysis of the Gas, Water, and Electric Lighting Bills will be found at pages 28 to 33.

APPLICATIONS TO THE BOARD OF TRADE UNDER THE RAILWAYS CONSTRUCTION ACT, WHERE THE PARTIES ARE REQUIRED PREVIOUSLY TO ARRANGE FOR THE PURCHASE OF LAND.

The Lee-on-the-Solent Light Railway.

The Lambourne Valley Light Railway.—Deviation of authorised railway.

ANALYSIS OF BILLS.

RAILWAY AND CANAL BILLS.

NAME OF BILL.	Page in Grouping List of Report, &c.	OBJECT OF BILL.	Capital Proposed.		Length of New Line Proposed.
			By Shares.	By Loan.	
			£.	£.	M. CHS.
Alexandra (Newport and South Wales) Docks and Railway.	53	To authorise the Company to make new railways: to extend the periods limited by the Company's Acts of 1882 and 1885 for the completion of the works; to enable the Company to acquire additional lands at Newport; to use the railways of the Pontypridd, Caerphilly, and Newport Railway Company, and a portion of the railway of the Brecon and Merthyr Tydfil Junction Railway Company, and to enter into working and traffic arrangements with those Companies and the London and North Western Railway Company.	240,000	80,000	14 33
Ayrshire and Wigtownshire Railway.	54	To enable the Company to use the railways of the Glasgow and South Western Railway Company between Girvan and Glasgow, including the Stations at Girvan and Glasgow.	—	—	—
Ballantrae Railway	54	To incorporate a Company for making a railway from the Ayrshire and Wigtownshire Railway at Pinwherry to Ballantrae; to enable them to use a portion of the Ayrshire and Wigtownshire Railway; to enter into working agreements with that Company and the Glasgow and South Western, the North British, and the Caledonian Railway Companies; to pay interest out of capital during the time limited for the construction of the works.	60,000	20,000	8 46
Barry Dock and Railways	53	To authorise the Company to construct new railways to Cardiff, and to join the Rhymney Railway and other works; to acquire additional lands to run over and use with their engines and carriages portions of the Rhymney and other railways north of the intended junction with the Rhymney Railway.	555,000	185,000	14 68
Beddgelert and Rhyd-ddu Railway.	52	To incorporate a Company for making a railway on the two-feet gauge, from the Portmadoc, Croesor and Beddgelert Tram-Railway to Rhyd-ddu Station of the North Wales Narrow Gauge Railway; to enable the Company to use portions of the two railways; to enter into traffic agreements with those Companies and the Festiniog Railway Company.	60,000	- 20,000	8 66
Belfast and Northern Counties Railway.	54, 58	To authorise the Company to make a junction between the Ballyclare and Ballyclare and Doagh Branch Lines; to divert and stop up a road at Carrickfergus; to acquire additional lands; to legalise certain level crossings on the Ballymena, Cushendal, and Redbay, and the Ballymena and Larne Lines; to make arrangements with regard to Capital; savings banks; to subscribe 10,000 £. to the Larne and Stranraer Steamship Company; to purchase Hotel at Portrush; to amalgamate the undertaking of the Carrickfergus and Larne Railway Company with that of the Company.	—	—	0 31

RAILWAY AND CANAL BILLS—continued.

NAME OF BILL.	Page in Grouping List of Report, &c.	OBJECT OF BILL.	Capital Proposed		Length of New Line Proposed.
			By Shares.	By Loan.	
			£.	£.	M. CHS.
Beverley and East Riding Railway.	51	To authorise the Beverley and East Riding Railway Company to extend their authorised railway to Bridlington and to the Hull and Barnsley Railway at Little Weighton; to abandon Railways Nos. 1 and 2 and parts of No. 3 authorised by the Act of 1889; to release portion of deposit under the Act of 1889; to enable the Company to use part of the Hull, Barnsley and West Riding Junction Railway, and to enter into working and traffic agreements with the Company; to pay interest on capital during the construction of the works.	300,000	100,000	18 3
Bexley Heath Railway	50	To extend the time for the purchase of land and completion of the railway	—	—	—
Birmingham, Kidderminster and Stoke Railway.	52	To incorporate a Company for the construction of railways from Kidderminster to the Midland Railway at Edgbaston, branches to the Harborne branch of the London and North Western Railway, to the Midland Railway at Stoke, and from Kidderminster to Stourport; to enable the Company to use the Midland Railway and the London and North Western Railway between the points of junction and New Street Station; to enter into working and traffic agreements with the two Companies; to pay interest on capital during the construction of the works.	660,000	220,000	29 41
Bray and Enniskerry Light Railway.	54	To revive the powers and extend the periods for the compulsory purchase of lands, and for the completion of the railway authorised in 1886: to repeal Section 12 of Act of 1886: to enable the Company to work their railway by electricity; to enter into working agreements with the Dublin, Wicklow, and Wexford Railway Company.	20,000	25,000	—
Brechin and Edzell District Railway.	53	To incorporate a Company for the construction of a railway from the Brechin branch of the Caledonian Railway to the village of Edzell; to enable them to enter into working and traffic arrangements with the Caledonian and North British Railway Companies.	87,500	12,500	5 7 ²
Bristol Docks (Railways)	50	To enable the Corporation of Bristol to construct railways, with branches, from the Bristol Harbour Railway to Cumberland Basin, and the Floating Harbour; to enable them to enter into working agreements with the Great Western Railway Company.	—	—	1 59
Burnley, Clitheroe, and Sabden Railway (abandonments).	51	To authorise the abandonment of the railway, and the release of the deposit.	—	—	—
Bury Corporation (Gas Works Siding).	51	To authorise the Corporation to construct a branch railway from a junction with the Lancashire and Yorkshire Railway to their gas works; to enter into agreements with the Lancashire and Yorkshire Railway Company, for the construction and working of the railway.	—	25,000	0 41

RAILWAY AND CANAL BILLS—continued.

NAME OF BILL.	Page in Grouping List of Report, &c.	OBJECT OF BILL.	Capital Proposed.		Length of New Line Proposed.
			By Shares.	By Loan.	
			£.	£.	M. CHS.
Bute Docks, Cardiff	53	To authorise the Company to construct two short railways in connection with the Taff Vale Railway: to transfer to the Company the powers conferred on the Rhymney Railway Company in 1888 for the construction of certain railways, and the raising of capital to enable the Company to enter into agreements for the construction of, and working of the railways with the Rhymney and the London and North Western Railway Companies; traffic facilities with those Companies.	300,000	100,000	0 24
Caledonian Railway (Additional Powers).	54	To authorise the Company to construct branch railways; to acquire additional land at Cambuslang; to confirm agreements with the Highland and the Solway Junction Railway Companies.	300,000	100,000	10 79
Caledonian Railway (Acquisition of Glasgow, and South Western Railway, &c.)	54. 58	To enable the Caledonian Railway Company to acquire the undertaking of the Glasgow and South Western Railway Company; to confer on the North British Railway Company the option of becoming joint owners, if authorised by Parliament, of that undertaking, including the separate interests of the Caledonian Company in the Glasgow and Paisley Joint Line, the Glasgow and Kilmarnock Joint Line, and the Portpatrick Joint Line, and the separate interests of the North British Company in the City of Glasgow Union Railway, and participation in the appointment of a Joint Committee.	—	—	—
Caledonian Railway (Edinburgh, Leith, and Newhaven Connecting Lines).	54	To authorise the Company to construct certain railways connecting portions of the undertaking in Edinburgh, Leith, and Newhaven, and other works.	750,000	250,000	6 62
Caledonian Railway (Conversion of Stock).	54	To authorise the Caledonian Railway Company to convert their Ordinary Stock into Preferred and Deferred Ordinary Stock.	—	—	—
Cathcart District Railway	54	To revive the powers and to extend the time for the purchase of lands, and the completion of the railways authorised in 1880: to authorise the Caledonian Railway Company to subscribe to the extent of 100,000 £, and raise for the purpose additional capital or Debenture Stock.	Shares or Debenture Stock, 100,000	—	—
Central London Railway	49	To incorporate a Company for constructing underground railways; one passing under Bayswater-road, from near Queen's-road, to Oxford-street, adjoining Old Quebec-street; a second in continuation under Oxford-street, Holborn, Moorgate-street, and Cheapside to King William-street; and a third to join the City of London and Southwark Subway; the whole to be constructed in two tubes or tunnels; the traffic to be worked by electricity or by other than steam locomotives; to enable the Company to enter into working agreements with the City of London and Southwark Subway Company; <i>to pay interest out of capital until the expiration of the time limited for the construction of the works.</i>	2,500,000	823,300	4 54
Channel Tunnel (Experimental Works).	50	To authorise the maintenance and continuance of the experimental works for a tunnel beneath the Straits of Dover. In the event of the experimental works proving successful to vest in the Treasury the power of determining the expediency of, prosecuting the permanent works, &c.	—	—	—

RAILWAY AND CANAL BILLS—continued.

NAME OF BILL.	Page in Grouping List of Report, &c.	OBJECT OF BILL.	Capital Proposed.		Length of New Line Proposed.
			By Shares.	By Loan.	
			£.	£.	M. CHS.
Cheltenham Station	52	To incorporate a Company for the construction of a new station at Cheltenham for the accommodation of the traffic of the Midland and South Western Junction Railway Company; to enable the Company to enter into working and traffic agreements with that Company, and to lease the station to them.	40,000	—	—
Cheshire Lines Committee.	52	To enable the Committee to acquire additional lands in Liverpool, at Toxteth Park, and at Childwall; to construct railways in connection with the Manchester South District Branch of the Midland Railway: to extend the time for the compulsory purchase of lands, and the completion of works, authorised by Section 56 of the Manchester, Sheffield, and Lincolnshire Railway Act, 1886.	—	—	3 14
City of London and Southwark Subway (Clapham Extension, &c.)	49	To enable the Company to extend their authorised subway to Clapham.	200,000	50,000	0 79
Cleveland Extension Mineral Railway.	51	To revive and extend the powers of the Company for the compulsory purchase of lands, and the completion of their authorised railways.	—	—	—
Columbia Market and Railways (Abandonment).	49	To authorise the abandonment of the railways and new street authorised in 1885; to provide for the release of the deposit.	—	—	—
Cork and Fermoy, and Waterford and Wexford Railway.	54	To incorporate a Company for the construction of railways between Cork and Fermoy, and Waterford and Wexford; to authorise the Grand Jury of the County of Cork, the Corporation of Cork and the Grand Jury of the County of Wexford to grant guarantees in respect of certain shares in the capital of the Company: reciprocal running powers between the Company and the Fermoy and Lismore, and the Waterford, Dungarvan, and Lismore Railway Companies: working agreements generally between the Company and the other railways in the South of Ireland.	950,000	265,000 210,000	75 31
Cornwall Minerals Railway.	50	To authorise the Company to construct a railway from the Rosevear Branch in the Parish of St. Austell: traffic facilities and working agreements between the Company and the Great Western Railway Company: <i>payment of interest out of capital during the time limited for the construction of the railway.</i>	24,000	8,000	3 0
Coventry Corporation Gas Bill.	52	To authorise the Corporation to construct a railway from their gas-works to the Coventry and Nuneaton Branch of the London and North Western Railway: working agreements between the Corporation and the railway company.	—	10,000	0 27
Grieff and Comrie Railway	53	To incorporate a Company for the construction of a railway from the Grieff Junction Branch of the Caledonian Railway to the village of Comrie: the Caledonian Company to be enabled to subscribe 20,000 £. and to raise that sum: working agreements between the two Companies; to authorise the Company to pay interest out of capital during time limited for the construction of the railway.	45,000	15,000	5 75

RAILWAY AND CANAL BILLS—continued.

NAME OF BILL.	Page in Grouping List of Report, &c.	OBJECT OF BILL.	Capital Proposed.		Length of New Line Proposed.
			By Shares.	By Loan.	
			£.	£.	M. CHS.
Croydon and Crystal Palace Railway.	50	To incorporate a Company for the construction of a railway from the south-western end of the Crystal Palace High Level Station, to a junction with the London, Brighton and South Coast Railway at the West Croydon Station: to enable the Company to use the Crystal Palace High Level Station of the Chatham Company, and the West Croydon Station of the Brighton Company: to enter into agreements and traffic arrangements with the two Companies: <i>to pay interest out of capital during the period limited for construction of railway.</i>	600,000	200,000	3 20
East and West Yorkshire Union Railways (Various Powers.)	51	To further extend the time for the compulsory purchase of lands and for the completion of the railways of the Company authorised by the Acts of 1883 and 1886: <i>to enable the Company to pay interest out of capital during the time limited for the construction of the railways: to change the name of the Company to that of "The Leeds and Hull Junction Railway, Company."</i>	—	—	—
East and West Yorkshire Union Railways (Abandonment, &c.).	51	To authorise the Company to abandon portions of their railways authorised by the Acts of 1883 and 1886: <i>to provide for the release of portions of the deposits under those Acts: to reduce the Company's capital: to change the name of the Company to that of "The Rothwell Junction Railway Company."</i>	—	—	—
East Gloucestershire Railway.	50	To authorise the Company to construct an extension of their railway from Fairfield Station to the Midland and South Western Junction Railway, at a point near Cerney Station: to raise additional capital: to enter into working agreements with the Company owning or using that railway: to use the Witney Railway: <i>to pay interest out of capital during the time limited for the completion of the extension.</i>	54,000	18,000	7 32
Easton and Church Hope Railway.	50	To revive the powers conferred upon the Company by their Acts of 1884 and 1887: to enable them to construct a railway in the parish of Portland from Wakeham to the authorised railway near the western reservoir of Folly Pier Waterworks, and another short railway from their authorised railway at Reforme.	—	—	1 76
East Usk Railway.	53	To revive the power conferred upon the Company by their Act of 1885, and to extend the time limited by that Act for the completion of the Company's railways.	—	—	—
Felixstowe and Bawdsey Ferry Railway (Extension of Time).	52	To extend the time for the purchase of lands and the completion of the railways authorised by the Company's Act of 1887.	—	—	—
Forfar and Brechin Railway.	53	To incorporate a Company for the construction of railways from the Caledonian Railway in the parish of Forfar to a junction with that Company's line at Brechin: to authorise them to use a portion of the Caledonian Railway and the Forfar Station: to enter into traffic arrangements with the Caledonian and the North British Railway Companies: <i>to pay interest out of capital during the time limited for the completion of the railways.</i>	120,000	40,000	15 16

RAILWAY AND CANAL BILLS—continued.

NAME OF BILL.	Page in Grouping List of Report, &c.	OBJECT OF BILL.	Capital Proposed.		Length of New Line Proposed.
			By Shares.	By Loan.	
Forfar, Brechin, and Edzell Railway.	53	To incorporate a Company for the construction of railways from the Caledonian Railway at Forfar to the village of Edzell, and to the Brechin Branch of that Company's railway at Brechin: to enable the Company to enter into working and traffic arrangements with the Caledonian and North British Railway Companies; <i>to pay interest out of capital during the time limited for the completion of the railways.</i>	£. 140,000	£. 46,666	M. CHS. 19 20
Forth Bridge Railway.	53	To enable the Company to raise additional capital.	200,000	66,666	—
Garve and Ullapool Railway.	53	To incorporate a Company for the construction of a railway from the Garve Station on the Dingwall and Skye section of the Highland Railway to Ullapool: to enable the Company to enter into working and traffic arrangements; <i>to pay interest out of capital during the time limited for the construction of the railway.</i>	240,000	80,000	33 54
Glasgow District Subways.	54	To incorporate a Company for constructing subways in Glasgow; the carriages to be drawn or propelled by means of stationary engines, and rope or cable haulage, or by other means than steam locomotives.	750,000	187,500	6 42
Great Eastern Railway (General Powers).	52	To authorise the Company to construct a short railway at Tottenham: to widen and improve their railways at Bethnal Green and Hackney, at Stratford-le-Bow, West Ham, the Tending Hundred Railway, the Felixstowe Railway, and the East Norfolk Railway at Norwich: to construct a bridge at Bishop's Stortford Station, foot-bridges at Tottenham, Enfield, Stanstead, Droxford, new bridge at Beccles, stopping up crossings at Brundall and at Rottenden: to acquire additional lands at Bethnal Green, Edmonton and Enfield, Leyton, Henham, Kelvedon, Theydon, Ashdon, and March: to extend the time for the completion of works authorised in 1882; revival of powers with regard to works authorised in 1887 at Spitalfields, Bethnal Green, West Ham, Romford and Liverpool-street Stations: the establishment of a pension fund, &c.	1,200,000	400,000	0 13
Great Eastern and Hunstanton and West Norfolk Railway Companies.	2, 53	To authorise the sale and transfer to the Great Eastern Railway Company of the undertaking of the Hunstanton and West Norfolk Railway Company.	165,000	—	—
Great Northern Railway (Capital).	52	To consolidate and re-arrange the capital of the Great Northern Railway Company, and to convert the rents and interests payable to companies whose undertakings are leased to or agreed to be leased to that Company.	—	—	—
Great Northern Railway (Various Powers).	52, 58	To authorise the Company to make a short railway in connection with the Farringdon-street Goods Depot; and a deviation railway at Putney: to make alterations at Battle Bridge-road and Congreve-street, at King's Cross; diversion of road at New Barnet: to extend the Bridge at Radcliffe-on-Trent: to divert footpath at Lincoln: to purchase additional lands at New Barnet, Hatfield, Stevenage, Werrington Junction, Radcliffe-on-Trent, Batley, Lofthouse, Ardsley Morley, and Bramley: to extend the time for the compulsory purchase of lands at Holloway, Grantham, Nottingham, at Lofthouse Junction, and East Markham: to enable the Company to guarantee dividends on the capital of the Newark and Ollerton Railway Company: to revive and extend time for completion of Sutton Bridge Dock Works: to confirm agreement for vesting in the Company the undertaking of the Spilsby and Firsby Railway Company.	1,000,000	333,000	0 4 Deviation 0 20

RAILWAY AND CANAL BILLS—*continued.*

NAME OF BILL.	Page in Grouping List of Report, &c.	OBJECT OF BILL.	Capital Proposed.		Length of New Line Proposed.
			By Shares.	By Loan.	
Great North of Scotland Railway (Various Powers).	53	To authorise the Company to make extension railways between Elgin and Inverness, called the Inverness Extension Railways, between Kilmorack and the Moray Firth, and a pier called the Black Isle Extension, and between Elgin and Burghead; to enable the Company to purchase the Fortress Pier, in county of Ross; to provide and work steam and other vessels in connection with the piers; to use the Burghead Harbour; to acquire additional lands at Aberdeen, and at Crathes Station; hotel at Aberdeen.	£. 486,000	£. 162,000	M. CHS. 66 8
Great Southern and Western Railway.	54	To enable the Company to make new roads and works at Clonygowan, Ballyhooly, Derreen, and Banteer; to acquire additional lands at Clonygowan, Ballyhooly, Fermoy, Goold's Cross Station, and Killarney; to revive and extend time for purchase of land; to substitute bridge for level crossing at Cork; to extend the time for completing railway at Cork; to legalise a level crossing at Banteer Station; to enable the Company to purchase by agreement a portion of the Ballywilliam branch of the Wicklow Railway; to enter into working agreements with the Mitchelstown and Fermoy Company.	—	Debenture Stock, 200,000	—
Great Western Railway -	50, 58	To authorise the Company to make a railway from the Avonmouth Dock to Almondsbury, a railway from Urchfont to East Coulston, in Wilts, and a short railway at Cardiff; widenings between Taplow and Reading, between Shipton-on-Cherwell, and Woodstock-road Station, a widening at Cardiff; to acquire additional lands in the parish of Bray, and at Cardiff; to extend and revive the powers for construction of certain railways authorised in 1883; to confirm an agreement with the Woodstock Railway Company; to extend the time for the construction of that Company's railway; to vest in the Company the undertaking of the Whitland and Cardigan Railway Company.	500,000	166,000	13 76 widening, 14 39
Guiselley, Yeadon, and Rawdon Railway.	51	To authorise the Company to extend their railway to the North Eastern Railway, near Horsforth; to extend the time for the purchase of lands and the completion of the railway authorised in 1885; to change the name of the Company to that of the "Leeds and Guiseley Railway Company," and to enable them to use the portion of the North Eastern Railway, between Headingley and Leeds; to enable the Company to enter into working and traffic agreements with the North Eastern and Midland Railway Companies.	168,000	56,000	4 12
Highland Railway (Further Powers).	53	To authorise the Company to maintain a branch railway constructed by them to the Caledonian Canal Basin at Inverness; to acquire additional lands at Inverness, Elgin, and Dingwall; to extend the time limited for the construction of railways authorised in 1884 and 1887.	—	—	0 57
Highland Railway (New Lines).	53	To authorise the Company to construct branch lines from Kilmorack to Rosemarkie, a branch line from near Campbeltown to the Moray Firth, and extensions of the Burghead Branch.	—	—	21 57

RAILWAY AND CANAL BILLS—continued.

NAME OF BILL.	Page in Grouping List of Report, &c.	OBJECT OF BILL.	Capital Proposed.		Length of New Line Proposed.
			By Shares.	By Loan.	
			£.	£.	M. CHS.
Hitchin Western Railway	52	To incorporate a Company for constructing a railway from the Great Northern Railway at Hitchin to the village of Lilley; to authorise them to enter into working and traffic arrangements with the Great Northern and the Midland Railway Companies; to use a portion of the Great Northern Railway and the Hitchin Railway; to <i>pay interest out of capital during the time limited for the construction of the railway.</i>	120,000	40,000	6 34
Holsworthy and Bude Railway.	50	To extend the time for the completion of the railway limited by the Acts of 1883 and 1888.	—	—	—
Holsworthy and Bude Railway (Abandonment).	50	To authorise the abandonment of the railway; to <i>provide for the release of the deposit under the Act of 1883.</i>	—	—	—
Houghton-le-Spring Railway.	51	To incorporate a Company for the construction of a railway from the North Eastern Railway to Houghton-le-Spring; to enable them to use a portion of that railway and the Painshaw Station; to enter into working and traffic agreements with the North Eastern Railway Company.	40,000	13,320	3 7
Hull and North Western Junction Railway (Abandonment).	51	To authorise the abandonment of the Hull and North Western Railway, to <i>provide for the release of the deposit.</i>	—	—	—
Hull and North Western Junction Railway (Various Powers).	51	To authorise the Company to construct a deviation line; to revive the powers and extend the time for the purchase of lands, and for the completion of certain portion of the railways authorised in 1852; to enter into working agreements with the London and North Western, Lancashire and Yorkshire, Midland, Manchester, Sheffield, and Lincolnshire, and Hull, Barnsley, &c., Railway Companies.	—	—	Deviation, 5 71
Hull, Barnsley, and West Riding Junction Railway and Dock.	51	To revive the powers granted by the Company's Act of 1882, for the compulsory taking and purchase of lands, and to extend the period limited for the completion of certain works; to abandon the construction of railway No. 3, authorised in 1884; to <i>provide for the release of a portion of the deposit fund of 1880</i> ; to create a reserve or guarantee fund for securing the payment of interest on first and second debenture stocks, &c.	—	—	—
Isle of Wight Railway	50	To enable the Company to consolidate and re-arrange their capital; to acquire additional land.	—	—	—
Isle of Wight Central Railway.	50	To authorise the Company to construct additional works at Brading; to stop up a foot-path at Slide Stations; to stop up foot-paths at Carisbrooke; to take additional lands.	—	Debenture Stock, 50,000	—
Kenmare Junction Railway.	54	To authorise the abandonment of the Kenmare Junction Railway; to <i>provide for the release of the deposit.</i>	—	—	—

RAILWAY AND CANAL BILLS—*continued.*

NAME OF BILL.	Page in Grouping List of Report, &c.	OBJECT OF BILL.	Capital Proposed.		Length of New Line Proposed.
			By Shares.	By Loan.	
			£.	£.	M. CHS.
Kensington and Paddington (Subway) Railway.	49	To incorporate a Company for the construction of (subway) railways between Kensington and Paddington passing <i>en route</i> from South Kensington Station under Exhibition-road, Kensington Gardens, and Grand Junction-road; steam power not to be used upon the railway, but electricity to be employed as the motive power; <i>to pay interest out of capital during the period limited for the construction of the works.</i>	450,000	150,000	1 50
Kirkcaldy and District Railway Extensions.	53	To authorise the Company to make extension railways; <i>to enable them to pay interest out of capital during the period limited for the construction of the railways.</i>	150,000	50,000	12 28
Lanarkshire and Ayrshire Railway.	54	To enable the Company to use the joint line of the Caledonian and Glasgow and South Western Railway Companies between Barr mill and Glasgow and portions of the Caledonian Railway at Glasgow; to fix tolls, rates, and charges, &c.	—	—	—
Lanarkshire and Dumbartonshire Railway.	54	To incorporate a Company for the construction of railways from the Caledonian Railway, near Glasgow, to Dumbarton and Ballock, with subsidiary lines and a pier on the bed and shore of Loch Lomond; to enable the Company to enter into agreements with the Caledonian Railway Company for the construction, maintenance, and working of the railways; the Caledonian Railway Company may guarantee payment of dividend on capital, and to subscribe 390,000 <i>l.</i> to enable the Company <i>to pay interest out of capital during the period limited for the construction of the railways.</i>	390,000	130,000	22 66
Lancashire and Yorkshire Railway.	51	To authorise the Company to construct short railways to the Manchester Race-course, and to the Salford Dock of the Manchester Ship Canal Company; to widen the line and works at Salford; the Manchester and Leeds line; the main line at Thornhill; the bridge over Collyhurst-street; to alter the levels of Sackville-street; and to construct a foot-bridge at Ashton-under-Lyne; to make road diversions and construct a foot-bridge at Little-horrough; to stop up roads at Bolton, Horsecar Moss; to widen a bridge at Aintree; to construct a foot-bridge at Ardwick; to stop up a footpath at Nelson; to widen the canal bridge at Burnley; to construct a new arch at Lostock Hall; to divert footpaths at Bamber Bridge, Hoddlesden, and Eastwood; to construct a foot-bridge at Featherstone; to purchase additional lands at Salford, Ashton-under-Lyne, Rosegrove, Bamber Bridge, Ormskirk, Bolton, Rishton, Horbury, Eastwood, Brockholes, Horsley, Sowerby Bridge, and Featherstone. Capital of the Company defined.	990,000	330,000	1 16
Latimer Road and Acton Railway.	49	To extend the time for the purchase of lands and for the construction of the authorised railway; to enable the Company to construct a new railway at Hammersmith, to join the Hammersmith and City Railway; to enter into agreements with the Metropolitan and Great Western Railway Companies for the working, use, and maintenance of the Companies' railways.	50,000	16,660	0 15
Llangammarch and Neath and Brecon Junction Railway (Abandonment).	53	To authorise the abandonment of the Llangammarch and Neath and Brecon Junction Railway; <i>to provide for the release of the deposit.</i>	—	—	—

RAILWAY AND CANAL BILLS—*continued.*

NAME OF BILL.	Page in Grouping List of Report, &c.	OBJECT OF BILL.	Capital Proposed.		Length of New Line Proposed.
			By Shares.	By Loan.	
			£.	£.	M. CHS.
Leeds and Liverpool Canal	51, 53	To amend the Acts relating to and to confer Further Powers upon the Company of Proprietors of the Canal Navigation from Leeds to Liverpool; and to change the name of the Company.	—	—	—
London and North Western Railway.	51	To authorise the Company to make junction railways at Willesden; a railway from the Weedon and Daventry line to the Rugby and Leamington line; a junction at Nuncaton; a railway from Seaton to Uppingham; junction railways at Warrington; and a railway from the Ashbourne Branch of the North Staffordshire Railway to the Cromford and High Peak Line; to improve and make a deviation of the Cromford and High Peak Line widening at Crewe, between Crewe and Sandbach, and between Inch Moss and Wigan; alterations, stopping up of footpaths, &c., at Aylesbury, Foleshill, Bescot, Pelsall, Little Morton, Acton, Delph, and Deganway; level crossing at Wapping; additional lands at Euston, St. Pancras, Finsbury, Shoreditch, Watford, Thorpe, Hampton-in-Arden, Griff, Lilbourne, Tattenhall-road, Wilmstow, Appleton, Moss Bank, Bootle, Longsight, Ince, Chorley, Dohcross, Diggle, Marsden, Dewsbury, Builth, Rosferig, Gorseinon, Swansea, Kinnerion, and Penmaenmawr: to enable the Company and the Lancashire and Yorkshire Railway Company to make a bridge over the railway at Preston; the Company and Great Western Company to acquire lands at Pontardulois; to enable the Company to abandon the construction of the Llanelly station authorised in 1876: to confirm an agreement with the Manchester, Sheffield, and Lincolnshire Railway Company.	—	—	33 18 Deviation 10 43
London and South Western Railway (Various Powers).	50	To authorise the Company to make new railways at Poole and at Twickenham, and widenings and improvements at Waterloo Station, Westminster Bridge, and Bournemouth; deviation of footpaths at Southampton and of a road at Brockenhurst; construction of a road and bridge at Sampford-Courtenay; to confirm existing road works at Southampton, at Bodmin, and at Titchfield; to acquire additional lands at Woking, Pirbright, Guildford, Farnham, Weybridge, Ditton, East Molesey, Lambeth; at Boldra, Brockenhurst, Crondall, Ringwood, Millbrook, Holderhurst, South Stoneham, Southampton; Canford Magna, Hendon, and Hampton; to revive the powers of taking land at Lambeth; to authorise the Company to convert their ordinary stock into preferred and deferred stocks; the accounts to show the amount of original capital authorised, created, and received, as if such conversion had not taken place. The Company and the Midland Company to be authorised to widen portions of the Somerset and Dorset Railway.	500,000	166,665	1 72
London, Brighton, and South Coast Railway (Agreements confirmed).	50	To confirm modifications made by awards of an umpire in certain agreements between the London, Brighton, and South Coast and South Eastern Railway Companies.	—	—	—
London, Brighton, and South Coast Railway (Various Powers).	50	To enable the Company to widen and improve their railway at Battersea and Streatham; to acquire additional lands at Bermondsey, Lambeth, Penge, West Brighton, and near Victoria Station; to confirm construction of improvements at Lewes; to confirm agreement with the Corporation of Croydon.	300,000	100,000	—

RAILWAY AND CANAL BILLS—continued.

NAME OF BILL.	Page in Grouping List of Report, &c.	OBJECT OF BILL.	Capital Proposed.		Length of New Line Proposed.
			By Shares.	By Loan.	
			£.	£.	M. CHS.
London Central (Subway) Railway.	49	To incorporate a Company for the construction of (subway) railways between Shepherd's Bush Common and Tottenham Court-road; to be constructed in covered way under the Uxbridge-road and Oxford-street; the Company to use electricity as the motive power; to pay interest out of capital during the period limited for the completion of the railways.	1,500,000	500,000	4 10
London, Chatham, and Dover Railway.	50	To enable the Company to raise further capital.	400,000	Debenture Stock. 200,000	—
Lynton Railway	50	To extend the period limited for the completion of the railways authorised by the Acts 1885, and 1886; to authorise the Company to abandon the construction of the railway junction and quay wall or embankment authorised in 1887, to provide for the repayment of a portion of the deposit under the Act, 1887; to enable the Company to pay interest out of capital during the time limited for the completion of the works.	30,000	10,000	—
Manchester, Sheffield, and Lincolnshire Railway.	52, 58	To authorise the Company to make a branch railway to Conisborough, and railways at Handsworth and Chesterfield; bridges at Openshaw; to stop up level crossing at Thornton Abbey Station, and a portion of a street at Openshaw; to acquire land at Great Grimsby, Frodingham, Mottram, Marple, and Staveley: to confirm an agreement for the maintenance, use, and management of the Wrexham, Mold, and Connah's Quay Railway, and an agreement to run over, work, and use the Liverpool, Southport, and Preston Junction, and the West Lancashire Railways; to extend the time for the completion of certain works authorised in 1866, 1883, and 1885; and for the purchase of certain lands for the purposes of the Acts of 1885 and 1886.	200,000	60,000	19 14
Manchester Ship Canal (Tidal Openings, &c.).	51	To authorise the alteration of certain of the canal works.	—	—	—
Manchester Ship Canal (Various Powers).	51	To confer further powers upon the Canal Company.	—	—	—
Mersey Railway	52, 58	To extend the time for the purchase of lands, and for the completion of certain of the Company's railways; to enable the Company to enter into agreements for the acquisition of the whole or any portion of the Wirral and Seacombe, Hoylake and Deeside Railways: to use portions of those railways: to enter into working and traffic agreements with the Lancashire and Yorkshire and Midland Railway Companies: to provide for a scheme of arrangement for payment of the Company's debts.	—	—	—
Metropolitan Railway	52, 58	To authorise the Company to construct railways extending from the Aylesbury and Buckingham Railway at Aylesbury to the East and West Junction Railway at Quainton; to construct subways at Euston-square, and near the King's Cross Station; to acquire lands at Missenden, adjoining the Moorgate-street Station, and at St. Pancras: to vest in the Company the undertaking of the Aylesbury and Buckingham Railway Company; to enter into working and traffic agreements with the South Eastern, the Manchester, Sheffield, and Lincolnshire, and the Great Northern Railway Companies; to extend the time for the completion of railway authorised in 1885.	600,000	200,000	31 61

RAILWAY AND CANAL BILLS—continued.

NAME OF BILL.	Page in Grouping List of Report, &c.	OBJECT OF BILL.	Capital Proposed.		Length of New Line Proposed.
			By Shares.	By Loan.	
			£.	£.	M. CHS.
Midland Railway - -	52, 58	To authorise the Company to construct short branch railways and junctions; a new road at Shipley, and footpaths at Shireland; to acquire additional lands at Leicester, at Basford, at Ripple, Bristol, Hendon, St. Pancras, Bramley, and Bingley: to vest in the Company and the Great Western Railway Company the undertaking of the Bristol Port Railway and Pier Company: to enable the Company and the London and North Western Railway Company to enter into agreements as to the joint ownership and construction of the Enderby and Huncote Branches.	1,500,000	500,000	9 79
Midland Railway (Shire-oaks, Conisbrough, and Swinton).	52	To authorise the Company to construct railways from their Mansfield Railway at Shire-oaks to the Manchester, Sheffield, and Lincolnshire Railway at Warnsworth, a connection with that Company's line at Shire-oaks, and with their own line at Swinton.	600,000	200,000	20 33
Midland Great Western Railway of Ireland.	54, 53	To empower the Midland Great Western Railway of Ireland Company to acquire the undertaking of the Great Northern and Western of Ireland Railway Company at present held by them under lease: to enable the Company to create and issue debenture stock and a rent-charge stock for the purposes of the Act. To enable the Company to acquire additional lands.	—	—	—
Milngavie, Strathendrick, and Port of Monteith Railway.	53	To incorporate a Company for the construction of railways extending from the Glasgow Central Railway at Maryhill, and from the Milngavie branch of the North British Railway to the Strathendrick and Aberfoyle Railway at Killearn; a doubling of that railway therefrom to a point about two miles south of Aberfoyle, and a branch line thence to the Port of Monteith. To enable the Company to enter into working agreements with the North British, Caledonian, Forth and Clyde, and the Strathendrick and Aberfoyle Railway Companies; to work over portions of those Company's railways, and to enter into traffic facilities with them; <i>to pay interest out of capital during the time limited for the construction of the works.</i>	170,000	56,600	27 24
North and South London Subway Railway.	49	To incorporate a company for the construction of subway railways extending from a point adjoining the Kentish Town-road, passing along in tunnel under High-street, Hampstead-road, Tottenham Court-road, Charing Cross-road, St. Martin's-place, Charing Cross, Whitehall, Parliament-street, Abingdon-street, the Thames, Lambeth-road, and St. George's-road. A subway for foot passengers at the Elephant and Castle. Electricity to be employed and used as the motive power; <i>to enable the Company to pay interest out of capital during the time limited for the construction of the works.</i>	1,300,000	433,300	5 39
North British Railway -	53	To authorise the Company to construct a loop-line of railway to join the Forth Bridge Railway; to enable them to subscribe to the undertaking of the West Highland Railway Company to any amount not exceeding two hundred thousand pounds.	84,000	28,000	4 62

RAILWAY AND CANAL BILLS—*continued.*

NAME OF BILL.	Page in Grouping List of Report, &c.	OBJECT OF BILL.	Capital Proposed.		Length of New Line Proposed.
			By Shares.	By Loan.	
			£.	£.	M. CHS.
North British and Glasgow and South Western Railway Companies.	59	To provide for the Amalgamation of the Glasgow and South Western Railway Company with the North British Railway Company; to dissolve the undertaking of the City of Glasgow Union Railway Company at present held in equal moieties by the two Companies, and to vest the same in the amalgamated Company; to define the capital of the North British Railway Company as amalgamated; to confirm agreement between the North British, the Glasgow and South Western, and the Midland Railway Companies; to extend the running powers conferred upon the Midland Railway Company by the Forth Bridge Railway Act, 1878, to the whole of the Company's undertaking between Carlisle and Perth, and between Carlisle and Dundee.	—	—	—
North Eastern Railway	51	To enable the North Eastern Railway Company to construct short Railways and widening of their existing railways; to acquire additional lands at Long Benton, Bebside Station at Newcastle-upon-Tyne, Bellingham, Bishopwearmouth, Stranton, Boldon, Holme, Market Weighton, Bridlington, Selby, and Leeds; to make road alterations at Bridlington, Cowton, and Overton.	400,000	133,000	4 63 widening 2 11
North Wales Narrow Gauge Railways.	52	To extend the time for the completion of the railways authorised by the Company's Extension Act, 1885.	—	Debenture Stock, 10,000	—
North West Central Rail-	51	To incorporate a Company for the construction of railways extending from the West Lancashire Railway, North Union and Lancashire and Yorkshire Railways, at Preston, passing by Ribchester, Whalley, Sabden, and Colne to Keighley; with various junctions with the Lancashire and Yorkshire; the Burnley, Clitheroe, and Sabden; the Midland, the Thornton, and Keighley, and the Great Northern Railways. To enable the Company to enter into working agreements with the London and North Western, Lancashire and Yorkshire, Midland, Great Northern, West Lancashire, Manchester, Sheffield and Lincolnshire, and Burnley, Clitheroe, and Sabden Railways; to use certain portions of those Companies' railways; to pay interest out of capital during the period limited for the construction of the railways.	2,000,000	666,664	47 13
Porthdinlleyn Railway (Abandonment).	52	To authorise the abandonment of the railway, and to provide for the release of the deposit.	—	—	—
Porthdinlleyn Railway (Extension of Time).	52	To revive the powers for the compulsory purchase of land, and to extend the period limited for the construction of the railway.	—	—	—
Regent's Canal, City and Docks Railway (Abandonment of Railways).	49	To authorise the abandonment of the undertaking (other than the Canal Undertaking) of the Company, and the release of the railway deposit.	—	—	—
Regent's Canal, City and Docks Railway (Extension of Time).	49	To revive the powers and further extend the time for the compulsory purchase of lands, and to further extend the time for the completion of the works authorised in 1882: to authorise the Company to issue their shares at a discount.	—	—	—

RAILWAY AND CANAL BILLS—continued.

NAME OF BILL.	Page in Grouping List of Report, &c.	OBJECT OF BILL.	Capital Proposed.		Length of New Line Proposed.
			By Shares.	By Loan.	
			£.	£.	M. CHS.
Rhondda and Swansea Bay Railway.	53	To authorise the Company to construct short Railways, with a quay at Port Talbot; to acquire additional lands; to enter into arrangements with the Port Talbot Dock Company, and agreements as to leasing Wharves, &c., and as to joint ownership with the Taff Vale Railway Company; to use portion of Taff Vale Railway, and to acquire traffic facilities over that railway.	66,000	22,000	2 8
Rhymney Railway	53	To authorise the Company to construct extension Railways, and to make special provision under which every holder of 6 l. per centum preference stock issued under the Rhymney Railway Act, 1861, may be entitled to convert his existing holding of that stock and to receive in substitution for every 100 l. of that stock held by him, 150 l. of new preference stock and 30 l. new ordinary stock.	45,000	15,000	4 53
Seacombe, Hoylake, and Deeside Railway	52	To revive the powers and extend the time for the completion of portion of the Railway authorised in 1881, and for the completion of certain Railways authorised in 1886; to transfer to Company a portion of the Wirral Railway; to enable them to use the Chester and Connah's Quay Railway; the name of the Company to be changed to "The Wirral Railway Company."	180,000	60,000	—
Selby and Mid-Yorkshire Union Railway (Church Fenton to Wistow) Abandonment.	51	To abandon the Railways authorised by the Church Fenton, Cawood, and Wistow Railway Act, 1879, and the Selby and Mid-Yorkshire Union Railway Act, 1883; to provide for the repayment of the deposit made under the Act of 1879.	—	—	—
South Eastern Railway	50	To authorise the Company to make a new Railway in connection with the Bricklayers' Arms Branch, and at Chatham to the Victualling Yard: Widenings at Southwark, stopping up a street at Rochester, stopping up footpaths at Frindsbury, Dorking, and Croydon: to acquire additional lands at Southwark, Charing Cross, Great Guildford Street, Red Cross Street, Bermondsey, Croydon, Coulsdon, Frindsbury, Dartford, Tonbridge, Rochester, Horsham, and Hastings; to extend time for purchase of lands and completion of the Lydd Railway Extension, and Cranbrook and Paddock Wood Railway; Extension of time, for the purchase of lands at Port Victoria, Folkestone Harbour: to increase subscription to Elham Valley Railway Company and Folkestone Tramway Company: commutation of certain Rent-charges.	—	—	0 34 0 54
South Yorkshire Junction Railway.	51	To incorporate a Company for the construction of railways in the West Riding of the County of York, from Wath to Denaby and Thorne, and from Wrangbrook to Black Carr Junction, with a branch line from Cadeby to Conisbrough: to enable them to run over and use the portion of the Hull and Barnsley Railway between the Junction therewith and Kirksmeaton Station, a portion of the Manchester, Sheffield and Lincolnshire Railway between the junctions therewith and Conisbrough Station; the portion of the Great Northern Railway between Doncaster and Rossington Stations, and the portion of the Great Northern and Great Eastern Joint Railway between Black Carr Junction and Finnerley Station; to enter into agreements for the construction and working of the Railways with the Manchester, Sheffield and Lincolnshire, Midland, Great Eastern, Great Northern, London and North Western, North Eastern, and Hull, Barnsley and West Riding Junction Railway Companies: to enable the Company to pay interest out of capital during the construction of the railways.	445,000	140,000	35 11

RAILWAY AND CANAL BILLS—*continued.*

NAME OF BILL.	Page in Grouping List of Report, &c.	OBJECT OF BILL.	Capital Proposed.		Length of New Line Proposed.
			By Shares.	By Loan.	
			£.	£.	M. CHS.
Taff Vale Railway - -	53	To authorise the Company to make extension and branch railways; to abandon the construction of Railway No. 4, authorised in 1885.	300,000	100,000	9 78
Tottenham and Forest Gate Junction Railway.	52	To incorporate a Company for the construction of a Railway from a junction with the Tottenham and Hampstead Junction Railway near South Tottenham Station, to a junction at East Ham, with the Forest Gate Branch of the London, Tilbury, and Southend Railway; to enable the Midland Railway Company to subscribe 100,000 £, and the London, Tilbury, and Southend Railway Company, 50,000 £; to confirm agreements scheduled to the Bill between the three Companies.	360,000	120,000	6 4
Tyne Improvement -	51	To consolidate the separate funds of the Tyne Improvement Commissioners, and to amend the provisions of the Tyne Improvement Commission Act, 1875: to empower the Commissioners to construct a Railway, and to work passenger and other traffic on their railways: to enter into working agreements with the North Eastern Railway Company.	—	—	0 47
Waterford and Limerick Railway.	54, 59	To enable the Company to purchase the undertaking of the Athenry and Ennis Junction Railway Company, and to confirm an agreement with that Company with regard thereto, to enable the Company to create and issue debenture stock for the purchase.	—	Debenture Stock, 190,000	—
Waterford and Limerick and Athenry and Ennis Junction Railways.	54, 59	To vest in the Waterford and Limerick Railway Company the undertaking of the Athenry and Ennis Junction Railway Company.	—	—	—
West Highland Railway -	53	To authorise the Company to make deviations in their authorised railway, and short branches and a pier in connection therewith; to enable them to pay interest out of capital during the period limited for the construction of the works.	51,000	17,000	2 33 Deviation, 13 14
Wirral Railway - -	52	To amend the Wirral Railway Transfer Act, 1889; to enable the Company to use the Chester and Connah's Quay Line of the Manchester, Sheffield, and Lincolnshire Company.	—	—	—
Wirral Railway - -	52	To repeal the Wirral Railway Transfer Act, 1889: to extend the time for the compulsory purchase of lands, and for the completion of the railways: to enable the Company to use the Chester and Connah's Quay Line of the Manchester, Sheffield, and Lincolnshire Railway Company, and a portion of the Mersey Railway.	—	—	—
Wirral Railway (No. 3) -	53	To extend the time for the compulsory purchase of land under the Wirral Railway Acts, 1884, 1885, and 1888, and the certificate of 1883; and for the construction of certain authorised portions of that railway: the powers of construction and maintenance of part of the Wirral Railway, as renewed and extended, to be exercised by the purchasing Companies: to enable them to construct a short railway.	—	—	0 19
Worcester and Broom -	52	To extend the time for the compulsory purchase of lands and for the completion of the railway.	—	—	—
Wrexham and Ellesmere Railway.	52	To extend the time for the compulsory purchase of lands, and for the completion of the railway.	—	—	—

TRAMWAY BILLS.

NAME OF BILL.	Page in Grouping List of Report, &c.	OBJECT OF BILL.	Proposed New Capital.		Length of Proposed Tramways.
			By Shares.	By Loan.	
			£.	£.	M. CHS.
Brentford and District Tramways.	55	To authorise the abandonment of the Company's Tramways; and to provide for the release of the deposit fund.	—	—	—
Clyde Navigation - -	55	To authorise the Trustees to construct a new road with Tramways thereon in substitution of the road and Tramways authorised in 1883.	—	—	—
Devonport, Keyham, and Ford Tramways.	55	To incorporate a Company for constructing a Tramway in New Passage-hill, William-street, and Keyham-road, Devonport.	6,000	1,500	double line 0 3 single line 1 12
Dublin United Tramways Company.	55	To authorise the Company to construct additional Tramways; to provide for the return of funds deposited in respect of the Acts of 1878 and 1880.	—	—	double line 3 20 single line 2 31
Folkestone, Sandgate, and Hythe Tramways.	55	To authorise the Company to construct additional Tramways.	10,000	2,500	double line 0 2 single line 1 21
Harrow Road and Paddington Tramways.	55	To authorise the Company to construct additional Tramways in the Harrow-road, Edgware-road, High-road, Kilburn, Maida Vale, Walthamton-road, and Kilburn-road.	100,000	25,000	double line 3 28 single line 1 52
Highgate and Hampstead Cable Tramways (transfer of Undertaking).	55	To transfer to, and vest in, the Highgate and Hampstead Cable Tramways, Limited, the undertaking and Tramways authorised and the statutory rights and privileges conferred by the Highgate Hill Tramways Order, 1882.	—	—	—
Huddersfield Tramways and Improvement.	55	To authorise the Corporation to construct additional Tramways in Huddersfield and the adjoining townships in the Borough.	—	For Tramway purposes, 64,000	double line 0 37 single line 13 27
Ipswich Tramways - -	55	To enable the Company to take up and relay and continue to work a part of Tramway Nos. 1 and 2 of the Act of 1882; to enable the Corporation and the Improvement Company to contribute; to enable the Company to issue mortgages in lieu of capital they have to raise; to provide for the release of deposits.	—	—	—
London Tramways Company, Limited.	55	To authorise the Company to use electricity or other mechanical power on their Tramways, and to lay down and maintain works necessary for using such powers.	—	—	—
Midland Tramways (Transfer of Undertaking).	55	To transfer to, and vest in, the Midland Tramways Company, Limited, the undertaking and Tramways authorised by the Dudley, Sedgley, and Wolverhampton Tramways Orders, 1880 and 1884.	—	—	—
North Metropolitan Tramways.	55	To authorise the working of the carriages on trucks used on the Tramways by electrical power.	100,000	25,000	—

TRAMWAY BILLS—*continued.*

NAME OF BILL.	Page in Grouping List of Report, &c.	OBJECT OF BILL.	Proposed New Capital.		Length of Proposed Tramways.
			By Shares.	By Loan.	
			£.	£.	M. CHS.
Penzance and Newlyn Tramways.	55	To incorporate a Company for constructing Tramways between Penzance and Newlyn; to widen streets and to make a new road; to authorise the use of wire ropes, cables, chains, electrical or other appliances placed underground in connection with stationary engines.	25,000	6,250	double line 0 45 single line 1 11
Pontypridd (Mill-street and Rhondda-road, &c.) Improvements and Tramways.	55	To enable the undertakers to construct short Tramways on a gauge of 3 feet 6 inches in Pontypridd.	—	—	double line 0 6 single line 0 37
Swansea Tramways		To enable the Company to run over, work, and use with locomotive engines, carriages or waggons, the Oystermouth Railway; to enter in working and traffic arrangements with the Swansea and Mumbles Railway Company, Limited, and the Mumbles Railway and Pier Company.	—	—	—
Terrington and Walpole Tramroads (Extension to Wisbeach).	55	To authorise the Terrington and Walpole Tramroad Company to extend their Tramroad to Wisbeach; and to enable them to enter into working agreements with the Great Eastern Railway Company.	36,000	9,000	5 21
Wellingborough and District Tramroads Extensions.	55	To authorise the Company to extend their Tramroads to Irchester, Rushden, and Higham Ferrers, and to form a junction with the Newport Pagnell and District Tramways at Olney; to enter into working agreements with the owners of the Newport Pagnell Tramways; and traffic agreements with the Midland Railway Company.	81,000	27,000	10 78
West London Tramways	55	To incorporate a Company, and to authorise them to construct Tramways from Haulwell through Ealing to Acton and Hammersmith, Kensington, Fulham, and Paddington.	100,000	25,000	double line 2 50 single line 5 25
Wharf River Navigation	55	To incorporate the Wharf River Navigation Company, and to authorise them to improve the Navigation, and to make short Tramways.	—	—	0 35
TOTAL - - - £.			468,000	185,250	
Length of Double Tramway - - - - -					10 31
Length of Single Tramway - - - - -					10 54
Length of Tramroad - - - - -					16 54
TOTAL LENGTH of Tramways and Tramroads - - - - -					37 59

GAS BILLS.

NAME OF BILL.	Page in Grouping List of Report.	OBJECT OF BILL.	Capital Proposed.		Special Rate of Dividend (if any).	Proposed Illuminating Power.	Proposed Maximum Price per 1,000 Feet.
			By Shares.	By Loan.			
Birkenhead Corporation.	56	To extend the limits of supply; and for other purposes. (See Water Bills.)	£. —	£. —	—	Candles. —	s. d. —
Canterbury Gas and Water.	56	To extend the limits for the supply of Gas; to authorise the Company to acquire lands; to construct Gasworks; to make a railway siding; to raise additional capital; providing for the application of profits; empowering the Company to apply for Provisional Order for the supply of electricity; and for other purposes. (See Water Bills.)	50,000	12,500	8 per cent. on all ordinary capital; 6 per cent. on preference capital, subject to Auction Clauses.	15	3 6 within 1½ mile radius. 4 — beyond; with sliding scale as to dividend.
Clayton, Allerton, and Thornton Gas.	56	To enable the Company to construct and maintain additional works; to raise additional capital; to supply gas fittings, &c.; to take lands; and for other purposes.	Such nominal amount as will produce 50,000 £.	One-fourth of the paid up additional capital, i.e., 12,500 £.	6 per cent. on additional ordinary capital; 5 per cent. on additional preference capital; subject to Auction Clauses.	—	—
Derby Gas -	56	To authorise the Company to make railways; to take additional lands; to construct works; to raise further capital; and for other purposes. (See Railway Bills.)	160,000	40,000	5 per cent. on additional ordinary capital; 5 per cent. on additional preference capital, subject to Auction Clauses.	—	—
Dundee Gas and Electric Light.	56	(See Electric Lighting Bills.)	—	—	—	—	—
Falmouth Gas -	56	To dissolve the "Limited" Company, and re-incorporate, with power to supply Gas, fittings, &c., within certain limits; to raise additional capital; to provide for the application of profits; and for other purposes. Original capital, 15,000 £.	5,000	5,000	10 per cent. on 12,000 £., subscribed capital, and 5 per cent. on original stock created for distribution; 7 per cent. on additional ordinary capital, and 6 per cent. on additional preference capital; subject to Auction Clauses.	15	5 — with sliding scale as to dividend.
Gravesend and Milton Gas.	56	To extend the limits of supply; to authorise the Company to acquire lands; to erect Gasworks; to supply gas fittings, &c.; to raise additional capital; and for other purposes.	35,000	8,750	10 per cent. upon original capital; 7½ per cent. on ordinary capital, authorised by Act of 1863 and by this Act; and 6 per cent. on new preference capital; subject to Auction Clauses.	15	3 6 and 4 s. beyond a radius of 2,900 yards from Town Hall; with sliding scale as to dividend.
Hartlepool Gas and Water.	56	To authorise the Company to acquire additional lands; to divert a footpath; to construct additional works; to provide for the application of capital already authorised for the purposes of the Act.	—	—	—	—	—

GAS BILLS—continued.

NAME OF BILL.	Page in Grouping List of Report.	OBJECT OF BILL.	Capital Proposed.		Special Rate of Dividend (if any).	Proposed Illuminating Power.	Proposed Maximum Price per 1,000 Feet.
			By Shares.	By Loan.			
Luton Gas - -	56	To authorise the Company to acquire lands; to raise additional capital; to repeal Section 61 of the Act of 1858, and to substitute provisions as to standard price of Gas; and for other purposes.	£. 40,000	£. 10,000	7 per cent. on additional ordinary capital; 5 per cent. on additional preference capital; subject to Auction Clauses.	Candles. 15	s. d. 3 9 with sliding scale as to dividend.
Oxford Corporation.	56	To empower the Corporation to purchase the Undertaking of the Oxford Gas Light and Coke Company; to provide for the dissolution of the Company; to authorise the Corporation to borrow money; and for other purposes. (See Electric Lighting Bills.)	—	Such sums as may be necessary.	—	—	—
Partick, Hillhead, and Maryhill Gas and Electricity Supply.	56	To dissolve the "Limited" Gas Company, and re-incorporate with powers to supply Gas and Electricity within certain limits; to construct works; to raise capital; to issue debenture stock; to repeal the powers of the Glasgow Corporation to supply Gas within the Company's limits of supply; and for other purposes. Original capital: Ordinary, 100,000 £; Preference, 30,000 £; Debenture, 35,490 £. (See Electric Lighting Bills.)	70,000	64,510	10 per cent. on original ordinary capital; 7 per cent. on additional ordinary capital in respect of Gasworks, and 10 per cent. in respect of electric works; subject to Auction Clauses. 5½ per cent. on original preference capital.	20	3 - with sliding scale as to dividend.
Sutton, Southcoates, and Drypool Gas Company (Electric Lighting).	56	(See Electric Lighting Bills).	—	—	—	—	—
Whitehaven Gas -	56	To dissolve the "Limited" Company, and re-incorporate, with power to supply Gas within certain limits; to raise additional capital; to acquire additional lands; to construct and maintain Gasworks; and for other purposes. Original capital: Shares, 60,000 £; Loan, 15,000 £. (See Electric Lighting Bills.)	20,000	5,000	8½ per cent. on original capital; 7 per cent. on additional ordinary capital; 6 per cent. on additional preference capital; subject to Auction Clauses.	14	5 -
Ystrad Gas and Water.	56	To authorise the Company to acquire additional lands; to raise money; to provide for separate accounts being kept for Gas and Water Undertakings; and for other purposes. (See Water Bills.)	—	—	—	—	—
TOTAL GAS BILLS -			430,000	158,260			

WATER BILLS.

NAME OF BILL.	Page in Grouping List of Report.	OBJECT OF BILL.	Capital Proposed.	
			By Share.	By Loan.
Airdrie and Coatbridge Waterworks.	57	To authorise the Company to construct works ; to acquire lands ; to raise additional capital, subject to auction clauses ; to confirm an agreement with the Glasgow Water Commissioners ; to define the limits of supply ; to increase the reserve fund ; and for other purposes.	£. 92,000	£. 23,000
Baildon Local Board - -	57	To authorise the Local Board to construct works for obtaining a further supply of water ; to take land ; to borrow money ; and for other purposes.	—	21,000 (5,000 £. with consent of Local Government Board), and costs of obtaining the Act.
Bilston Commissioners (Water).	57	To confer powers upon the Commissioners to make waterworks ; to take lands ; to borrow money ; providing as to repayment of borrowed moneys ; for the appointment of a receiver ; for the application of revenue ; and for other purposes.	—	20,000 And expenses of the Act. Such further sums as may be sanctioned by the Local Government Board.
Birkenhead Corporation -	56	To provide for an extension of time for completion of authorised waterworks ; to vary the provisions of the Birkenhead Corporation (Gas and Water) Act, 1881, as to construction of a reservoir ; to extend the limits of supply ; to provide for charging and recovery of water rents ; and for other purposes. (See Gas Bills.)	—	—
Bradford Corporation Waterworks.	57	To enable the Corporation to acquire additional lands and waters ; to construct works ; to provide for the constitution of a board of management of Nidd millowners ; for the regulation and control of compensation waters ; to empower the Corporation to acquire mines and minerals ; to divert roads ; to raise additional moneys ; and for other purposes.	—	1,230,000
Canterbury Gas and Water -	56	To authorise the Company to raise further capital, subject to auction clauses ; to confer further powers with respect to the supply of water ; and for other purposes. (See Gas Bills.)	25,000	6,250
Derby Corporation - -	57	To extend the limits of supply ; to empower the Corporation to make additional waterworks ; to take lands and waters ; to borrow money ; providing as to period for repayment of money borrowed ; and for other purposes.	—	200,000
Dewsbury and Heckmondwike Water	57	To extend the time for the construction of waterworks authorised by the Dewsbury and Heckmondwike Waterworks Act, 1876 ; to confer further powers as to the supply of water in bulk to local authorities ; to authorise the Corporation of Dewsbury or the Local Board of Heckmondwike, to lend money to such local authorities for waterworks purposes ; providing for the repayment of principal and interest ; and for other purposes.	—	The amount of the loans made under the provisions of the Act.

WATER BILLS—continued.

NAME OF BILL.	Page in Grouping List of Report.	OBJECT OF BILL.	Capital Proposed.	
			By Share.	By Loan.
			£.	£.
Higham and Hundred of Hoo Water.	57	For incorporating the Company, with power to raise capital; to take lands; to construct works; to supply water within certain limits; and for other purposes.	28,000	7,000
Huddersfield Waterworks -	57	To transfer the Wessenden Undertaking to the Corporation; and to free the Corporation from certain obligations in relation thereto; to authorise the construction of new works; to substitute the Butterley Reservoirs for the works named in sec. 68 of the London and North Western (New Lines, &c.), Act 1875; empowering the Corporation to take lands; to borrow money; and for other purposes.	—	500,000 And costs of the Act, and amount of interest payable on money borrowed under the Act.
Leicester Corporation Water	57	To extend the limits of supply; to provide for sale of portions of the undertaking to Sanitary Authorities; to authorise the construction of additional works; to enable the Corporation to borrow money; authorising the sale of certain redeemable stock; and for other purposes.	—	320,000 And costs of Act.
Liverpool Corporation -	57	To repeal so much of section 55 of the Liverpool Corporation Waterworks Act, 1880, as prohibits payment out of borrowed moneys of interest on moneys borrowed under that Act; to authorise the Corporation to borrow a sum equal to the aggregate amount of interest paid on moneys borrowed for construction of works under the Act of 1880 up to 30th June 1890; to abolish differences in relation to water supply and charges as between the city of Liverpool and the borough of Bootle-cum-Linacre; and for other purposes.	—	Sums necessary under the A
Mid-Sussex Water - -	57	For dissolving the "Limited" Company, and reincorporating with power to supply water within certain limits; to construct and maintain waterworks; to supply water in bulk; to authorise the Company to raise capital; to annul the Mid-Sussex Water Order, 1888; and for other purposes. Existing capital, 11,640 £.	38,360	25,000
Morley Corporation Water -	57	To enable the Corporation to take lands and waters; to construct additional waterworks; to define the rates for the supply of water; to provide for application of revenue; to authorise the borrowing of money; and for other purposes.	—	100,000
Newark-upon-Trent Waterworks.	57	For dissolving and reincorporating the Newark-upon-Trent Waterworks Company, with powers to supply water within certain limits; to raise additional capital, subject to auction clauses; to make waterworks; to fix the rates for the supply of water; and for other purposes. Original capital: share, 14,000 £; loan, 5,650 £.	46,000	12,850
Newcastle and Gateshead Water.	57	To authorise the Company to construct additional works; to raise further capital, subject to auction clauses; to provide for the consolidation of leases and wayleaves granted to the Company by the Duke of Northumberland; and for other purposes.	120,000	30,000
Plymouth Corporation - -	57	Empowering the Corporation to make waterworks; to take lands and waters; to retain lands acquired under the Plymouth Corporation Act, 1887; to amend the borrowing powers of the Corporation under the Act of 1887; and for other purposes.	—	50,000

WATER BILLS—continued.

NAME OF BILL.	Page in Grouping List of Report.	OBJECT OF BILL.	Capital Proposed.	
			By Share.	By Loan.
Pontypool Gas and Water -	57	To extend the limits of supply ; to empower the Company to construct additional water-works ; to raise capital, subject to auction clauses ; to enter into agreements for supply of water in bulk or otherwise ; and for other purposes.	£. 40,000	£. 10,000
South Lincolnshire Fen Water.	57	To authorise the transfer to the Company of the undertaking of the Spalding Water-work's Company ; to provide for the winding up of the Spalding Company ; to repeal certain sections of the Act of 1888 ; and to enable the Company to raise additional capital ; and to borrow money on mortgage ; to extend the time for completion of works authorised by the Act of 1888 ; to amend the agreement scheduled to the Act of 1888 ; and for other purposes.	20,000	20,000
Stockton and Middlesbrough Water.	57	To amend the Acts relating to the supply of water by the Stockton and Middlesbrough Water Board as to the time for completion of works, for compulsory purchase of lands, sale of portions of the undertaking to sanitary authorities, fish passes, borrowing powers, and other matters ; to authorise the construction of new works and deviations of authorised works ; to authorise the payment of interest on money borrowed until completion of works ; and for other purposes.	—	Corporation of Stockton, 163,450 Corporation of Middlesbrough, 196,140
Tunbridge Wells Improvement.	57	To provide for the payment of water rates in advance half-yearly ; to authorise the Corporation to create a renewal fund ; to sell or let meters ; and for other purposes.	—	—
Warrington Extension Water and Improvement.	57	To enable the Corporation to purchase the undertaking of the Warrington Waterworks Company ; to provide for the winding up of the Company ; to authorise the borrowing of money ; and for other purposes.	—	Such sums as may be necessary.
Wessenden Reservoir -	57	To authorise the Commissioners to construct new works, and to supply water for trade or business purposes, or to the Corporation of Huddersfield ; to borrow money on mortgage ; to provide for the appointment of an arbitrator by the Board of Trade to adjudicate upon claims for compensation ; to empower the Commissioners to levy rates ; to form a Reserve Fund ; and for other purposes.	—	95,000 And an additional sum of 15,000 <i>l.</i> , if required.
Ystrad Gas and Water	56	To authorise the Company to construct additional works ; to take lands and waters ; to raise further capital, subject to auction clauses ; to amend the rates for the supply of water ; to authorise the supply of water in bulk ; to provide for the keeping of separate accounts for the Gas and Water Undertakings ; and for other purposes.	90,000	22,500
(See Gas Bills.)			£.	
			540,560	3,067,190

ELECTRIC LIGHTING BILLS.

NAME OF BILL.	Page in Grouping List of Report.	OBJECT OF BILL.	Proposed New Capital.	
			By Shares.	By Loans.
			£.	£.
Aberdeen Electric Lighting	56	To authorise the Corporation to erect and maintain electrical lines and works, and to supply electrical energy within the city of Aberdeen; to take lands; to raise money; and for other purposes.	—	50,000
City of London Electric Lighting.	56	To authorise the House-to-House Electric Supply Company, Limited, to supply electrical energy within the City of London; to erect and maintain works; and for other purposes.	—	—
Dundee Gas and Electric Light.	56	To authorise the Dundee Gas Commissioners to supply electrical energy within a portion of the burgh of Dundee; to purchase lands; to construct works; to provide for the application of existing powers of raising money to the purposes of this Act; and for other purposes.	—	—
Glasgow Corporation - -	56	To authorise the Corporation to supply electrical energy within the city of Glasgow; to purchase lands; to execute works; to borrow money authorised to be raised under the Gas Acts of the Corporation for the purposes of this Act; and for other purposes.	—	250,000 (already authorised.)
Oxford Corporation - -	56	To enable the Corporation to supply electrical energy within certain limits included in the borough of Oxford; to purchase lands; to execute works; to borrow money; and for other purposes. (See Gas Bills.)	—	Such sum as the Local Government Board may sanction.
Partick, Hillhead, and Maryhill Gas and Electricity Supply.	56	To authorise the Company to supply electrical energy within certain limits; to execute works; to raise capital; to provide for separate accounts being kept of gas and electric undertakings; and for other purposes. (See Gas Bills.)	—	—
St. Martin - in - the - Fields Electric Lighting.	56	To authorise Messrs. A. and S. Gatti to supply electrical energy within certain limits included in the parish of St. Martin-in-the-Fields; to execute works; to provide for separate accounts of the undertaking being kept; and for other purposes.	—	—
Strand Electric Lighting -	56	To authorise Messrs. A. and S. Gatti to erect and maintain electric lines and works, and to supply electrical energy within portions of the parishes of St. Clement Danes, and St. Paul, Covent Garden; to provide for separate accounts being kept of the undertaking; and for other purposes.	—	—
Sutton, Southcoates, and Drypool Gas Company (Electric Lighting).	56	To empower the Company and the Corporation of Kingston-upon-Hull to enter into agreements for the generation and supply of electricity by the Company; to enable the Company to acquire lands; to appropriate portion of their present authorised capital not yet created, for the purposes of the Act; to borrow money; to provide for separate accounts of the electric undertaking being kept; and for other purposes.	30,000 (already authorised.)	20,000
Whitehaven Gas - -	56	To empower the Company to erect works and supply electricity; and for other purposes. (See Gas Bills.)	—	—
			£.	70,000

APPLICATIONS TO THE BOARD OF TRADE FOR PROVISIONAL ORDERS.

TRAMWAY PROVISIONAL ORDERS.

NAME OF ORDER.	OBJECTS OF ORDER.	Length of the Proposed Tramways.		Estimated Cost of Proposed Tramways.
		Double Line.	Single Line.	
		M. CHS.	M. CHS.	£.
Aldershot and Farnborough (Extension).	To authorise the construction of additional Tramways in the county of Southampton.	0 37	1 7	11,254
Bradford and District (Extension).	To authorise the construction of a Tramway in the vicinity of Bradford, in the West Riding of the county of York, on a gauge of 4 feet, to be worked by animal power, or, with the consent of the Board of Trade, by steam power, or any mechanical power.	0 25	2 19	10,915
Bradford Corporation - -	To authorise the Corporation of Bradford to construct additional Tramways, and to borrow 30,000 £., to be repaid in 30 years.	1 18	3 33	30,000
Drypool and Marfleet - -	To authorise the Drypool and Marfleet Steam Tramways Company, Limited, to purchase, by agreement a portion of the tramways of the Hall-street Tramways Company, or to exercise running powers thereon, and, with the consent of the Board of Trade, to use steam, electrical, or any mechanical power on such portion of the said Tramways; and for other purposes.	—	—	—
Dudley, Netherton, Old Hill and Cradley (Abandonment)	To authorise the abandonment of the Order of 1837, and the release of the deposit fund.	—	—	—
Lea Bridge, Leyton, and Walthamstow.	To authorise the construction of a new Tramway in Leyton and Hackney, to be worked by animal power, and, with the consent of the Board of Trade, by electrical power, or any mechanical power, except steam locomotives.	0 14	0 20	3,800
National Rifle Association (Bisley Common Tramway).	To authorise the construction of a Tramway in the parishes of Pirbright and Woking, in the county of Surrey, on a gauge of 4 feet 8½ inches, or any lesser gauge to be approved by the Board of Trade, to be worked by animal power, or, with the consent of the Board of Trade, by steam, electrical, or any mechanical power.	0 5	1 12	8,829
North Staffordshire (Extensions and Amendments).	To authorise the construction of certain additional Tramways, in the borough of Longton, in the parish of Stoke-upon-Trent, in the county of Stafford; extending the time for the use of steam or any mechanical power on certain portions of the Tramways already authorised, and repealing or amending certain Orders and Certificates of the Board of Trade affecting certain Tramways of the Promoters.	0 2	0 6	850

TRAMWAY PROVISIONAL ORDERS—*continued.*

NAMES OF ORDER.	OBJECTS OF ORDER.	Length of the Proposed Tramway.		Estimated Cost of Proposed Tramways.
		Double Line.	Single Line.	
		M. C.	M. CHS.	£.
Norwich - - - -	To authorise the abandonment of the Tramways authorised by the Norwich Tramways Order, 1887, and the release of the deposit fund.	—	—	—
Poole and Bournemouth - -	To authorise the construction of Tramways in the borough and county of Poole, the parish of Kinson, in the county of Dorset, and the parish of Boldenhurst, in the county of Southampton, on a gauge of 3 feet 6 inches, to be worked by animal power, or, with the consent of the Board of Trade, by electrical, steam, or any mechanical power, including compressed air and the cable system.	0 17	2 42	16,336
Tong Local Board - - -	To authorise the construction of a Tramway in the district of Tong, in the West Riding of the county of York, on a gauge of 4 feet to be worked by animal power, or, with the consent of the Board of Trade, by steam power, electrical power, or any mechanical power, and to authorise mutual running powers between the promoters and the corporation of Bradford.	0 19	1 5	6,935
Warboys and Puddock Drove -	To authorise the construction of a Tramway in the parishes of Warboys and Ramsey, in the county of Huntingdon, on a gauge of 4 feet 8½ inches, to be worked by animal power, or, with the consent of the Board of Trade, by any mechanical power; and authorising the promoters and certain Railway Companies to enter into traffic arrangements.	0 55	3 33	8,536
Worcester - - - -	To authorise the transfer to, and vesting in, the City of Worcester Tramways Company, Limited, the undertakings authorised by the Worcester Tramways Orders, 1881 and 1885, and the abandonment of the Tramways authorised by the Worcester Tramways Order, 1887, and the release of the deposit fund.	—	—	—
TOTAL - - -		3 32	15 17	97,455
		18 49		

GAS AND WATER PROVISIONAL ORDERS.

GAS PROVISIONAL ORDERS.

NAME OF ORDER.	OBJECT OF ORDER.	Capital Proposed.	
		By Shares.	By Loans.
		£.	£.
GAS ORDERS:			
Alton (Hants) Gas - - - -	To empower the Alton Gas and Coke Company to maintain and continue Gasworks, and to make and supply Gas in the town and parish of Alton, in the county of Southampton - - - -	<i>Original</i> 2,500 <i>Additional</i> 7,500	625 1,875
Barnoldswick Gas - - - -	To empower the Barnoldswick Gas and Light Company, Limited, to maintain and continue Gasworks, and to make and supply Gas in the townships of Barnoldswick, Coates, and Salterforth, in the parish of Barnoldswick, and the township of Thornton, in the parish of Thornton and Craven, all in the West Riding of the county of York - - - -	<i>Original</i> 12,000 <i>Additional</i> 12,000	3,000 3,000
Hollingworth Gas - - - -	To empower the Hollingworth Gas Company, Limited, to construct, maintain, and continue Gasworks, and to make and supply Gas within the township of Hollingworth, in the parish of Mottram-in-Longendale, in the county of Chester - - - -	8,000	2,000
Hoylake and West Kirby Gas - -	To empower the Hoylake and West Kirby Gas and Water Company, Limited, to raise additional capital for the purposes of their Gas undertaking - - - -	10,000	2,500
Huntingdon and Godmanchester Gas	To empower the Huntingdon and Godmanchester Gas and Coke Company, Limited, to maintain and continue Gasworks, and to make and supply Gas in the boroughs of Huntingdon and Godmanchester, both in the county of Huntingdon - - -	12,000	3,000
Llanridnod Gas - - - -	To empower Messrs. R. P. A. Swettenham, W. N. Swettenham, and W. Bulton, to construct Gasworks, and to make and supply Gas within the parishes and places of Llandrindod, Llandrindod Wells, Cefnlllys Trefonen, and Llanbadarn-fawr, all in the county of Radnor - - - -	3,000	1,000
Sheffield Gas - - - -	To empower the Sheffield United Gaslight Company to construct additional works, and for other purposes - - - -	-	-

GAS PROVISIONAL ORDERS—continued.

NAME OF ORDER.	OBJECT OF ORDER.	Capital Proposed.	
		By Shares.	By Loans.
		£.	£.
Stourbridge Gas - - - -	To empower the Stourbridge Gas Company to construct additional works, and for other purposes -	-	-
Studley Gas - - - -	To empower the Studley Gas, Coal and Coke Company, Limited, to maintain and continue Gasworks, and to make and supply Gas within the parishes of Studley and Sambourne, in the county of Warwick - - - -	2,500	625
Tonbridge Gas - - - -	To empower the Tonbridge Gas Company to construct additional works, to raise additional capital, and for other purposes - - - -	13,000	3,250
Ware Gas - - - -	To empower the Ware Gas Light and Coal and Coke Company, Limited, to maintain and continue Gasworks, and to make and supply Gas within the district of the Ware Local Board of Health, in the county of Hertford - - - -	<i>Original</i> 8,500 <i>Additional</i> 9,500	2,125 2,375
Wellingborough Gas - - -	To empower the Wellingborough Gas Light Company, Limited, to extend their limits of supply so as to include the parishes of Wilby, Great Doddington, and Earl's Barton, all in the county of Northampton, and to make a special charge for Gas supplied in these parishes - - - -	-	-
York Town and Blackwater Gas -	To empower the York Town and Blackwater Gas and Coke Company, Limited, to maintain and continue Gasworks, and to make and supply Gas within part of the parish of Frimley, in the county of Surrey, and parts of the parishes of Hawley and Yately, in the county of Southampton - - -	5,000	1,250
TOTAL - - - £.		105,500	26,625

WATER AND GAS AND WATER PROVISIONAL ORDERS.

NAME OF ORDER.	OBJECT OF ORDER.	Capital Proposed.	
		By Shares.	By Loans.
WATER ORDERS.			
Camborne Water - - - -	To empower the Camborne Water Company to construct additional Waterworks, to raise additional Capital; and for other purposes -	£. 3,000	£. 1,000
Caton Water - - - -	To empower Messrs. B. P. Gregson, A. Greg, and T. G. Edmondson to maintain and continue Waterworks, to construct additional Works, and to supply Water in the township of Caton, and part of the township of Quernmore, in the parish of Lancaster, in the county of Lancaster - - - -	<i>Original.</i> 4,000	1,000
		<i>Additional.</i> 4,000	1,000
Frith Hill, Godalming, and Farncombe Water.	To empower the Frith Hill, Godalming, and Farncombe Water Company, Limited, to construct additional Waterworks, and to include the parish of Bramley, in the county of Surrey, within the limits of supply - - - -	—	—
Leatherhead and District Water -	To empower the Leatherhead and District Waterworks Company to raise additional Capital - - - -	25,000	6,250
Mid Kent Water - - - -	To empower the Mid Kent Water Company, Limited, to construct additional Waterworks, to raise additional Capital, and to include the parishes or places of Wouldham, Burham, Aylesford, and East Malling, in the county of Kent, within the limits of supply -	18 000	4,500
Stockport District Water - - -	To empower the Stockport District Water Company to raise additional Capital - - -	32,000	8,000
Todmorden Water - - - -	To empower the Todmorden Waterworks Company to raise additional Capital - - -	10,000	2,500
Usk Water - - - -	To empower the Usk Waterworks Company, Limited, to construct Waterworks, and to supply Water, in parts of the parishes of Monkswood, Llanbaddoc, Gwehelog, and Usk, all in the county of Monmouth - - -	6,000	1,500
TOTAL - - - £.		102,000	25,750
GAS AND WATER PROVISIONAL ORDER.			
Aldershot Gas and Water - - -	To empower the Aldershot Gas and Water Company to raise additional Capital, to purchase additional Lands, to construct additional Gasworks thereon; and for other purposes - - - -	20,000	5,000
TOTAL Gas, Water, and Gas and Water Provisional Orders - } £.		227,500	57,375

ELECTRIC LIGHTING PROVISIONAL ORDERS.

NAME OF ORDER.	OBJECT OF ORDER.	Capital Proposed to be Expended.
Aberdare Electric Supply Order	To authorise the Western House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the parish of Aberdare.	£. 85,000
Aberdeen Electric Lighting Order	To authorise the Lord Provost, Magistrates, and Town Council of the city and Royal borough of Aberdeen to erect and maintain electric lines and works, and to supply electrical energy within that city.	50,000
Aberdeen Electric Supply Order	To authorise the Scottish House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the city and Royal burgh.	85,000
Accrington Electric Lighting Order	To authorise the Mayor, Aldermen, and Burgesses to supply electricity within the municipal borough of Accrington.	35,000
Acton and Ealing Electric Supply Order.	To authorise the House-to-House Electric Light Supply Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the district of the Acton Local Board and the district of the Ealing Local Board.	85,000
Ashton-under-Lyne Electric Light and Power Order.	To authorise the Municipal Electric Light and Power Corporation (Limited) to supply electricity within the municipal borough of Ashton-under-Lyne.	25,000
Ayr Burgh Electric Lighting Order	To authorise the Provost, Magistrates, and Council of the burgh of Ayr, as Commissioners of Police, to supply electricity within the municipal burgh of Ayr.	6,000
Bacup Electric Lighting Order	To authorise the Mayor, Aldermen, and Burgesses to supply electricity within the municipal borough of Bacup.	10,000
Barnsley Electric Lighting Order	To authorise the Mayor, Aldermen, and Burgesses to supply electricity within the municipal borough of Barnsley.	33,000
Barrow-in-Furness Electric Supply Order.	To authorise the Lancashire and Cheshire House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the borough of Barrow-in-Furness.	85,000
Bedford Electric Lighting Order	To authorise the Mayor, Aldermen, and Burgesses, acting as the Urban Authority for the borough, to supply electricity within the municipal borough of Bedford.	17,000
Bedford Electric Supply Order	To authorise the Midland House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the borough of Bedford.	50,000
Belgravia Electric Lighting Order	To authorise the Chelsea Electricity Supply Company (Limited) to erect and maintain lines and works, and to supply electricity within the parish of St. George, Hanover-square.	30,000
Belfast Electric Lighting Order	To authorise the Mayor, Aldermen, and Citizens of the city of Belfast to supply electricity within the said city.	50,000
Birkenhead Electric Lighting Order	To authorise the Mayor, Aldermen, and Burgesses of the borough of Birkenhead to supply electricity within that borough.	43,000
Birmingham Electric Supply Order	To authorise the Birmingham House-to-House Electricity Company (Limited) to construct and maintain electric wires and works, and to supply electricity within the city of Birmingham.	85,000
Blackburn Electric Lighting Order	To authorise the Mayor, Aldermen, and Burgesses to supply electricity within the borough of Blackburn.	40,000
Blackpool Electric Lighting Order	To authorise the Mayor, Aldermen, and Burgesses to supply electricity within the said borough.	16,000
Bognor Electric Lighting Order	To authorise the Electric Trust (Limited) to construct and maintain electric lines and works, and to supply electricity within the Local Board District of Bognor.	4,000
Bolton Electric Supply Order	To authorise the Lancashire and Cheshire House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the county borough of Bolton.	85,000

ELECTRIC LIGHTING PROVISIONAL ORDERS—*continued.*

NAME OF ORDER.	OBJECT OF ORDER.	Capital Proposed to be Expended.
		£.
Bootle-cum-Linacre Electric Supply Order.	To authorise the Lancashire and Cheshire House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the borough of Bootle-cum-Linacre.	85,000
Bournemouth Electric Lighting Order.	To authorise the Brush Electrical Engineering Company (Limited) to supply electricity within the district under the control of the Bournemouth Improvement Commissioners, together with the adjacent district in the county of Dorset.	20,000
Bournemouth Electric Supply Order.	To authorise the South of England House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the urban sanitary district of Bournemouth.	50,000
Brighton and Hove Electric Supply Order.	To authorise the Brighton and Hove Electric Light Company (Limited, to construct and maintain electric lines and works, and to supply electricity within the borough of Brighton, the parish of Preston, and the town of Hove.	85,000
Bristol Electric Lighting Order -	To authorise the Brush Electrical Engineering Company (Limited) to supply electricity in the city and county of Bristol.	25,000
Bristol Electric Supply Order -	To authorise the Western House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the city and county of Bristol.	85,000
Burnley Electric Lighting Order -	To authorise the Mayor, Aldermen, and Burgesses of the borough of Burnley to supply electricity within that borough.	15,000
Burton-upon-Trent Electric Lighting Order.	To authorise the Mayor, Aldermen, and Burgesses of the borough of Burton-upon-Trent to supply electricity within the said borough.	20,000
Bury Electric Lighting Order -	To authorise the Mayor, Aldermen, and Burgesses of the borough of Bury to supply electricity within the said municipal borough.	18,000
Bury Electric Supply Order -	To authorise the Lancashire and Cheshire House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the county borough of Bury.	85,000
Cambridge Electric Lighting Order	To authorise the Mayor, Aldermen, and Burgesses of the borough of Cambridge to supply electricity within that borough.	50,000
Cardiff Electric Lighting Order -	To authorise the Brush Electrical Engineering Company (Limited) to supply electricity within the borough of Cardiff.	25,000
Cardiff Electric Supply Order -	To authorise the Western House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the county borough of Cardiff.	85,000
Carlisle Electric Lighting Order -	To authorise the Brush Electrical Engineering Company (Limited) to supply electricity within the city of Carlisle.	25,000
Chatham, Rochester, and District Electric Lighting Order.	To authorise the Chatham, Rochester, and District Electric Lighting Company (Limited) to supply electricity in the parishes of Frindsbury, Strood, St. Nicholas and St. Margaret's, Rochester, Chatham, and Gillingham	50,000
Cheltenham Electric Lighting Order.	To authorise the Mayor, Aldermen, and Burgesses of the borough of Cheltenham to construct and maintain electric lines and works, and to supply electricity within that borough.	15,000
Cheltenham Electric Supply Order	To authorise the Midland House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the area of the borough of Cheltenham.	85,000
Cheltenham Electric Lighting Order	To authorise the Laing, Wharton, and Down Construction Syndicate (Limited) to supply electricity within the municipal borough of Cheltenham.	50,000

ELECTRIC LIGHTING PROVISIONAL ORDERS—*continued.*

NAME OF ORDER.	OBJECT OF ORDER.	Capital Proposed to be Expended.
		£.
Chester Electric Lighting Order -	To authorise the Mayor, Aldermen, and Citizens of the city and county of the city of Chester to supply electricity for public and private purposes within the city and county of the city of Chester, and that part of the county of Chester which is within the walls of the said city.	Schedule A. 20,000 Schedule B. not stated.
City of London Electric Lighting Order.	To authorise the Brush Electrical Engineering Company (Limited) to supply electricity within the City of London.	100,000
City of London Electric Lighting Order.	To authorise the Laing, Wharton, and Down Construction Syndicate (Limited) to supply electricity within the City of London and the liberties thereof.	250,000
City of Westminster Electrical Syndicate Order.	To authorise the City of Westminster Electrical Syndicate (Limited) to construct and maintain electric lines and works, and to supply electricity within the parishes of St. George, Hanover-square, and St. Margaret and St. John, Westminster.	Not stated.
Coatbridge Electric Supply Order -	To authorise the Scottish House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the burgh of Coatbridge.	85,000
Cork Electric Supply Order - -	To authorise the Irish House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the borough and barony of Cork.	85,000
Coventry Electric Supply Order -	To authorise the Midland House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the city and county of Coventry.	85,000
Crompton Electric Lighting Order	To authorise the Local Board for the district of Crompton to supply electricity within the Urban Sanitary district of Crompton.	20,000
Croydon Electric Lighting Order -	To authorise the Croydon Electric Supply Company (Limited) to supply electricity within the parish and county borough of Croydon.	50,000
Croydon Electric Supply Order -	To authorise the South of England House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the county borough of Croydon.	85,000
Crystal Palace and District Electric Lighting Order.	To authorise the Electric Installation and Maintenance Company (Limited) to supply electricity within portions of the following districts:—Parishes of Lambeth and Camberwell; District of Lewisham;—District Board of Works of Beckenham;—Local Board and Borough of Croydon.	20,000
Darlington Electric Lighting Order	To authorise the Mayor, Aldermen, and Burgesses to supply electricity within a portion of the municipal borough of Darlington.	18,000
Darlington Electric Supply Order -	To authorise the Northern House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the borough of Darlington.	85,000
Derby Corporation Electric Lighting Order.	To authorise the Mayor, Aldermen, and Burgesses to erect and maintain electric lines and works, and to supply electricity within the borough of Derby.	50,000
Dewsbury Electric Lighting Order	To authorise the National Electric Supply Company (Limited) to supply electricity within a portion of the parish of Dewsbury.	30,000
Dover Electric Lighting Order -	To authorise the Mayor, Aldermen, and Burgesses to supply electricity within the borough of Dover.	50,000
Dundee Electric Lighting Order -	To authorise the Gas Commissioners and the Commissioners of Police to supply electricity within the Parliamentary burgh of Dundee.	21,000
Dundee Electric Supply Order -	To authorise the Scottish House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the city and Royal burgh of Dundee.	85,000

ELECTRIC LIGHTING PROVISIONAL ORDERS—*continued.*

NAME OF ORDER.	OBJECT OF ORDER.	Capital Proposed to be Expended.
		£..
Eastbourne Electric Supply Order	To authorise the Eastbourne Electric Light Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the borough of Eastbourne.	Not stated. £. 25,000 has been already employed.
Edinburgh and Leith Electric Supply Order.	To authorise the Scottish House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the city and Royal burgh of Edinburgh and the burgh of Leith.	85,000
Edinburgh Electric Light and Power Order.	To authorise the Scottish Electric Supply Company (Limited) to supply electricity for public and private purposes within the city and Royal burgh of Edinburgh.	Not stated.
Fleetwood Electric Lighting Order	To authorise the Fleetwood Improvement Commissioners to supply electricity within the urban sanitary district of Fleetwood.	Not stated.
Folkestone Electric Lighting Provisional Order.	To authorise Crompton & Co. (Limited) to supply electricity for all public and private purposes in the municipal borough of Folkestone.	Not stated.
Fulham and Hammersmith Electric Supply Order.	To authorise the House-to-House Electric Light Supply Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the parishes of Fulham and Hammersmith.	85,000
Galway Electric Lighting Order	To authorise the Galway Electric Company to supply electricity within the district over which the Galway Town Improvement Commissioners are the urban sanitary authority.	3,000
Glasgow Electric Lighting Order	To authorise the Lord Provost, Magistrates, and Town Council of the city and Royal burgh of Glasgow to erect and maintain electric lines and works, and to supply electricity for public and private purposes within the city and Royal burgh of Glasgow.	250,000
Glasgow Electric Supply Order	To authorise the Scottish House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the area of the city and Royal burgh of Glasgow, the police burghs of Maryhill, Patrick, Hillhead, Govan and Govanhill, Kinning Park, Pollokshields East, and Pollokshields West.	85,000
Great Yarmouth Electric Lighting Order.	To authorise the Mayor, Aldermen, and Burgesses of the borough of Great Yarmouth to supply electricity within that borough.	20,000
Hammersmith and Fulham Electric Lighting Order.	To authorise the Brush Electrical Engineering Company (Limited) to supply electricity in the parishes of Hammersmith and Fulham.	20,000
Hanley Electric Supply Order	To authorise the Birmingham House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the area of the county borough of Hanley	50,000
Harrogate Electric Lighting Order	To authorise the National Electric Supply Company (Limited) to supply electricity within a portion of the borough of Harrogate.	30,000
Hastings and St. Leonards-on-Sea Electric Supply Order.	To authorise the Hastings and St. Leonards-on-Sea Electric Light Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the borough of Hastings (including St. Leonards-on-Sea).	50,000
Hastings Electric Lighting Order	To authorise the Mayor, Aldermen, and Burgesses of the borough of Hastings to supply electricity within that borough.	Schedule A. 5,828
Hawick Electric Supply Order	To authorise the Scottish House-to-House Electricity Company, Limited, to construct and maintain electric lines and works and to supply electricity within the burgh of Hawick.	85,000
Hove Electric Lighting Order	To authorise the Hove Commissioners to supply electricity within the district and parish of Hove.	50,000

ELECTRIC LIGHTING PROVISIONAL ORDERS—*continued.*

NAME OF ORDER.	OBJECT OF ORDER.	Capital Proposed to be Expended.
		£.
Huddersfield Electric Lighting Order.	To authorise the Mayor, Aldermen, and Burgesses of the county borough of Huddersfield to supply electricity within the said borough.	50,000
Ipswich Electric Lighting Order -	To authorise the Brush Electrical Engineering Company (Limited) to supply electricity within the borough of Ipswich.	20,000
Kelvinside Electric Lighting Order	To authorise the Kelvinside Electricity Company (Limited) to supply electricity within the district of Kelvinside.	10,000
Kensington and Knightsbridge Electric Lighting Order.	To authorise the Kensington and Knightsbridge Electric Lighting Company (Limited) to lay down, erect, and maintain electric lines, and to erect and maintain works, and to supply electricity within the parishes of St. Mary Abbott, Kensington, St. Margaret and St. John-the-Evangelist, Westminster, Paddington, St. Marylebone, and St. George, Hanover-square.	Not stated.
Kingston-upon-Hull Electric Lighting Order.	To authorise the Mayor, Aldermen, and Burgesses to supply electricity, for public and private purposes, within the town and county of the town of Kingston-upon-Hull.	200,000
Kingston-upon-Thames and Surbiton Electric Supply Order.	To authorise the South of England House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the borough of Kingston-upon-Thames and district of Surbiton.	85,000
Kingston-upon-Thames, Surbiton, and Hampton Wick Electric Lighting Order.	To authorise the Mayor, Aldermen, and Burgesses of the borough of Kingston-upon-Thames, the Surbiton Improvement Commissioners, and the Hampton Wick Local Board to supply electricity within the municipal borough of Kingston-upon-Thames, the parish of Kingston-upon-Thames, the districts of the Surbiton Improvement Commissioners, and of the Hampton Wick Local Board.	15,000
Lambeth Electric Supply Order -	To authorise the House-to-House Electric Light Supply Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the parish of St. Mary, Lambeth.	85,000
Lancaster Electric Lighting Order	To authorise the Mayor, Aldermen, and Burgesses of the borough of Lancaster to supply electricity within the municipal borough of Lancaster.	40,000
Leeds Electric Lighting Order -	To authorise the Electric Installation and Maintenance Company (Limited), heretofore styled the Electric Construction and Maintenance Company (Limited), to supply electricity within the borough of Leeds.	30,000
Leeds Electric Lighting Order -	To authorise the National Electric Supply Company (Limited) to supply electricity within a portion of the parish of Leeds.	90,000
Leeds Electric Supply Order -	To authorise the Yorkshire House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the borough of Leeds.	85,000
Leicester Electric Lighting Order.	To authorise the Mayor, Aldermen, and Burgesses of the county borough of Leicester, to supply electricity within the said borough.	50,000
Leicester Electric Supply Order -	To authorise the Midland House-to-House Electricity Company (Limited), to construct and maintain electric lines and works, and to supply electricity within the borough of Leicester.	85,000
Liverpool Electric Supply Order -	To authorise the Liverpool House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the city and parish of Liverpool.	85,000
Londonderry Electric Supply Order	To authorise the Irish House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the city of Londonderry.	85,000
London Electric Supply Corporation Electric Lighting (City) Order.	To authorise the London Electric Supply Corporation (Limited) to supply energy for all public and private purposes in the City of London and the Liberties thereof.	Not stated.

ELECTRIC LIGHTING PROVISIONAL ORDERS—*continued.*

NAME OF ORDER.	OBJECT OF ORDER.	Capital Proposed to be Expended.
London Electric Supply Corporation Electric Lighting (Metropolitan) Order.	To authorise the London Electric Supply Corporation (Limited) to supply energy for all public and private purposes in various parishes and districts in and adjacent to the Metropolis.	Not stated.
Malvern and Leigh Electric Supply Order.	To authorise the Midland House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the districts of the Malvern Local Board, the Malvern Link Local Board, and the Leigh Special Drainage District.	85,000
Malvern Electric Lighting Order -	To authorise the Malvern Local Board to supply electricity for the Urban Sanitary District of Malvern.	15,000
Manchester Electric Lighting Order	To authorise the Brush Electrical Engineering Company (Limited) to supply electricity within a portion of the district of Manchester.	50,000
Manchester Electric Lighting Order	To authorise the Laing, Wharton, and Down Construction Syndicate (Limited) to supply electricity within the city of Manchester and the Liberties thereof.	200,000
Manchester Electric Lighting Order	To authorise the Mayor, Aldermen, and Citizens of the city of Manchester to supply electricity in the city of Manchester.	95,000
Manchester, Salford, and District Electric Supply Order.	To authorise the Manchester House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the city of Manchester, borough of Salford, and Local Board Districts of Crumpsall, Failsworth, Openshaw, Gorton, Moss Side, Stretford, Withington, and Levenshulme.	85,000
Margate and Westgate-on-Sea Electric Light and Power Order.	To authorise the Municipal Electric Light and Power Corporation (Limited) to supply electricity within the municipal borough of Margate, and portions of the parishes of St. John-the-Baptist, Minster, and Acol.	50,000
Metropolitan Electric Supply Com- pany (Limited) Lighting Order.	To authorise the Metropolitan Electric Supply Company (Limited) to erect and maintain electric lines and works, and to supply electricity within the City of London and the Liberties thereof, and certain parishes and places in the county of London.	200,000
Metropolitan Electric Supply Com- pany (Limited) (City of London) Lighting Order.	To authorise the Metropolitan Electric Supply Company (Limited) to erect and maintain electric lines and works, and to supply electricity within the City of London and the Liberties thereof.	100,000
Morecambe Electric Light and Power Order.	To authorise Thomas Reginald Andrews and Thomas Preece to construct and maintain electric works and appliances, and to produce and supply electricity within the district of Morecambe Local Board.	15,000
Muir, Mavor, & Coulson (Limited) Electric Lighting Order.	To authorise Muir, Mavor, & Coulson (Limited) to supply electricity within a portion of the city of Glasgow.	250,000
Newcastle-upon-Tyne Electric Supply Order.	To authorise the Northern House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the area of the city and county of Newcastle-upon-Tyne.	85,000
Newport (Mon.) Electric Supply Order.	To authorise the Western House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the municipal borough of Newport (Mon.).	85,000
Northampton Electric Lighting Provisional Order.	To authorise the Northampton Electric Light and Power Company (Limited) to supply electricity for all public and private purposes in the municipal borough of Northampton and adjoining districts.	Not stated.
North London Electric Lighting Order.	To authorise the Brush Electrical Engineering Company (Limited) to supply electricity within the parishes of Hampstead, St. Leonard Shoreditch, St. Pancras, St. James and St. John, Clerkenwell, St. Luke's, Old Street, St. Marylebone, St. Mary, Islington, St. Matthew, Bethnal Green, and the districts of Whitechapel, Hackney, and Stoke Newington.	100,000

ELECTRIC LIGHTING PROVISIONAL ORDERS—*continued.*

NAME OF ORDER.	OBJECT OF ORDER.	Capital Proposed to be Expended.
North London Electric Supply Order.	To authorise the House-to-House Electric Light Supply Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the parish of Islington and the district of the Hornsey Local Board.	£. 85,00
North-West London Electric Supply Order.	To authorise the House-to-House Electric Light Supply Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the parish of Hampstead, in the county of London, and the districts of the Finchley Local Board, the Hendon Local Board, and the Willesden Local Board, in the county of Middlesex.	85,000
Norwich Electric Lighting Order	To authorise the Brush Electrical Engineering Company (Limited) to supply electricity within the city and county of Norwich.	25,000
Nottingham Electric Lighting Order.	To authorise the Mayor, Aldermen, and Burgesses of the borough of Nottingham to supply electricity within the borough of Nottingham.	83,000
Nottingham Electric Supply Order.	To authorise the Midland House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the borough of Nottingham.	85,000
Oldham Electric Lighting Order -	To authorise the Mayor Aldermen, and Burgesses of the county borough of Oldham to supply electricity within the said borough.	37,000
Oldham Electric Supply Order -	To authorise the Lancashire and Cheshire House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the county borough of Oldham.	85,000
Oxford Electric Lighting Order -	To authorise the Electric Installation and Maintenance Company (Limited), heretofore styled the Electric Construction and Maintenance Company (Limited) to supply electricity within the city of Oxford.	30,000
Oxford Electric Supply Order -	To authorise the Midland House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the district of the Local Board and borough of Oxford.	85,000
Paddington Electric Supply Order	To authorise the House-to-House Electric Light Supply Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the parish of Paddington.	85,000
Partick, Hillead, and Maryhill Electric Lighting Order.	To authorise the Partick, Hillhead, and Maryhill Gas Company, (Limited), to supply electricity within the burghs of Partick, Hillhead, and Maryhill, the parishes of West or Old Kilpatrick, East or New Kilpatrick, and portions of the parishes of Govan, Renfrew, and Maryhill.	34,000
Plymouth Electric Supply Order -	To authorise the Electric Trust (Limited) to supply electricity within the municipal borough of Plymouth.	25,000
Plymouth and District Electric Supply Order.	To authorise the Devon and Cornwall Electricity Supply Company (Limited), to construct and maintain electric lines and works, and to supply electricity within the area of the county borough of Plymouth, the county borough of Devonport, the district of the Local Board of Health for the district of East Stonehouse, and the tything or district of Compton Gifford.	Not stated.
Portsmouth Electric Lighting Order.	To authorise the Mayor, Aldermen, and Burgesses of the borough of Portsmouth to erect and maintain electric lines and works, and to supply electricity within the borough of Portsmouth.	63,000

ELECTRIC LIGHTING PROVISIONAL ORDERS—*continued.*

NAME OF ORDER.	OBJECT OF ORDER.	Capital. Proposed to be Expended.
Portsmouth Electric Lighting Order.	To authorise the Laing, Wharton, and Down Construction Syndicate (Limited) to supply electricity within the municipal and county borough of Portsmouth.	£. 60,000
Portsmouth Electricity Supply Order.	To authorise the Portsmouth and South Hants Electricity Supply Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the area of the borough of Portsmouth.	50,000
Preston Electric Lighting Order -	To authorise the National Electric Supply Company (Limited) to supply electricity within a portion of the parish of Preston.	30,000
Preston and Fulwood Electric Supply Order.	To authorise the Lancashire and Cheshire House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the area of the county borough of Preston, and in the township of Fulwood, and in the district of the Fulwood Local Board, and in the district of the Preston Union Rural Sanitary Authority.	85,000
Reading Electric Lighting Order -	To authorise the Brush Electrical Engineering Company (Limited) to supply electricity within the borough of Reading.	20,000
Reading Electric Supply Order -	To authorise the South of England House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the county borough of Reading.	85,000
Richmond, Surrey, Electric Lighting Order	To authorise the Brush Electrical Engineering Company (Limited) to supply electricity within the parish of Richmond (Surrey).	20,000
Richmond, Mortlake, and Barnes Electric Supply Order.	To authorise the South of England House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the parishes of Richmond, Mortlake, and Barnes.	85,000
Rochdale Electric Supply Order -	To authorise the Lancashire and Cheshire House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the borough of Rochdale.	85,000
St. James' Electric Lighting Order	To authorise the St. James' and Pall Mall Electric Light Company (Limited) to supply electricity within the parish of St. James', Westminster.	60,000
St. Margaret and St. John-the-Evangelist, Westminster, Electric Lighting Order.	To authorise Messrs. Renshaw, King & Co. to supply electricity within a portion of the united parishes of St. Margaret and St. John-the-Evangelist, Westminster.	In addition to 60,000 £, already expended under a license within the same area. 40,000
St. Martin-in-the-Fields and Strand Electric Supply Order.	To authorise Agostino and Stefano Gatti to construct and maintain electric lines and works and to supply electricity within the parish of St. Martin-in-the-Fields, and in the parishes of St. Paul, Covent Garden, and St. Clement Danes within the district of the Strand District Board of Works).	30,000 already expended. Further sum to be expended not stated.
St. Pancras Electric Supply Order	To authorise the House-to-House Electric Light Supply Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the parish of St. Pancras.	85,000

ELECTRIC LIGHTING PROVISIONAL ORDERS—*continued.*

NAME OF ORDER.	OBJECT OF ORDER.	Capital Proposed to be Expended.
		£.
Salford Electric Lighting Order -	To authorise the Mayor, Aldermen, and Burgesses of the county borough of Salford to supply electricity within the said borough.	20,000
Scarborough Electric Lighting Order.	To authorise the Brush Electrical Engineering Company (Limited) to supply electricity within the borough of Scarborough.	25,000
Scarborough Electric Lighting Order.	To authorise the Electric Installation and Maintenance Company (Limited), heretofore styled the Electric Construction and Maintenance Company (Limited), to supply electricity within the borough of Scarborough.	15,000
Scarborough Electric Supply Order	To authorise the Yorkshire House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the borough of Scarborough.	85,000
Sevenoaks Electric Lighting Order	To authorise the Electric Trust (Limited) to construct and maintain electric lines and works, and to supply electricity within the Local Board district of Sevenoaks.	5,000
Southampton Electric Supply Order.	To authorise the South of England House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the borough of Southampton.	85,000
Stafford Electric Lighting Order -	To authorise the Mayor, Aldermen, and Burgesses of the borough of Stafford to supply electricity within the said borough.	100,000
Stockport Electric Lighting Order	To authorise the Brush Electrical Engineering Company (Limited) to supply electricity within the borough of Stockport.	20,000
Stockton-on-Tees Electric Lighting Order.	To authorise the Mayor, Aldermen, and Burgesses of the borough of Stockton-on-Tees to supply electricity within the said borough.	20,000
Sunderland and Southwick Electric Supply Order.	To authorise the Sunderland and District Electricity Supply Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the borough of Sunderland and the township of Southwick.	85,000
Tiverton Electric Lighting Order -	To authorise the Mayor, Aldermen, and Burgesses of the borough of Tiverton to supply electricity within a portion of the municipal borough of Tiverton.	Not stated.
Torquay Electric Light and Power Order.	To authorise the Municipal Electric Light and Power Corporation (Limited) to supply electricity within the district of the Local Board of Torquay.	50,000
Torquay and District Electric Supply Order.	To authorise the Devon and Cornwall Electricity Supply Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the area of the district of the Local Board of Health for the district of Torquay.	85,000
Tunbridge Wells Electric Supply Order.	To authorise the South of England House-to-House Electricity Company (Limited) to construct and maintain lines and works, and to supply electricity within the borough of Tunbridge Wells.	50,000
Tunstall Electric Lighting Order -	To authorise the Electric Trust (Limited) to construct and maintain electric lines and works, and to supply electricity within the Local Board district of Tunstall.	5,000

ELECTRIC LIGHTING PROVISIONAL ORDERS—*continued.*

NAME OF ORDER.	OBJECT OF ORDER.	Capital Proposed to be Expended.
Walsall Electric Lighting Order -	To authorise the Mayor, Aldermen, and Burgesses of the borough of Walsall to supply electricity within the said borough.	£. 20,000
Wandsworth District Electric Supply Order.	To authorise the House-to-House Electric Light Supply Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the district of the Wandsworth District Board of Works.	85,000
Westminster Electric Supply Corporation (Paddington and St. Marylebone) Electric Lighting Order.	To authorise the Westminster Electric Supply Corporation (Limited) to supply electricity for public and private purposes in the parishes of Paddington and St. Marylebone.	300,000
Wigan Electric Lighting Order -	To authorise the Mayor, Aldermen, and Burgesses of the borough of Wigan to supply electricity within the said borough.	20,000
Windsor and Eton Electric Lighting Order.	To authorise the Windsor and Eton Electric Light Company (Limited) to supply electricity within the parishes of New Windsor, Clewer, Eton, and Datchet.	30,000
Woking Electric Supply Company (Woking and Weybridge) Order.	To authorise the Woking Electric Supply Company (Limited) to supply energy for all public and private purposes in the parishes of Woking and Weybridge.	10,000
Wolverhampton Electric Lighting Order.	To authorise the Mayor, Aldermen, and Burgesses of the borough of Wolverhampton to supply electricity within the municipal borough of Wolverhampton.	25,000
Worcester Electric Lighting Order	To authorise the Mayor, Aldermen, and Citizens of the city of Worcester to supply electricity within the city of Worcester.	15,000
Worcester Electric Supply Order -	To authorise the Midland House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the city of Worcester.	85,000
Wrexham Electric Light and Power Order.	To authorise the Wrexham and District Electric Supply Company (Limited) to produce, supply, and store electricity for public and private purposes within the borough of Wrexham.	20,000
York Electric Lighting Order -	To authorise the Lord Mayor, Aldermen, and Citizens of the city of York to supply electricity within the said city.	40,000
York Electric Lighting Order -	To authorise the National Electric Supply Company (Limited) to supply electricity within a portion of the city of York.	40,000
York Electric Supply Order -	To authorise the Yorkshire House-to-House Electricity Company (Limited) to construct and maintain electric lines and works, and to supply electricity within the city and county of the city of York.	85,000

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VI.—Cheshire and North Wales :

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VII.—Midland District :

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VIII.—Eastern Counties and adjoining District :

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X.
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XII.—IRELAND.

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XIV

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Electric Lighting.

ELECTRIC LIGHTING.

*Aberdeen Electric Lighting Bill.**City of London Electric Lighting Bill.**Dundee Gas and Electric Lighting Bill.**Glasgow Corporation Bill.**Oxford Corporation Bill.***Partick, Hillhead, and Maryhill Gas and Electricity Supply Bill.**St. Martin's-in-the-Fields Electric Lighting Bill.**Strand Electric Lighting Bill.**Sutton, Southcoates, and Drypool Gas Company (Electric Lighting) Bill.***Whitchaven Gas Bill.*

Grouping.

XIV.

Gas, Electric
Lighting, and
Water Bills.

Water.

WATER.

*Airdrie and Coatbridge Waterworks Bill.**Baildon Local Board Bill.**Bilston Commissioners (Water) Bill.**Bradford Corporation Waterworks Bill.**Derby Corporation Bill.**Dewsbury and Heckmondwike Water Bill.**Higham and Hundred of Hoo Bill.**Huddersfield Waterworks Bill.**Leicester Corporation Water Bill.**Liverpool Corporation Bill.**Mid-Sussex Water Bill.**Morley Corporation Water Bill.**Newark-upon-Trent Waterworks Bill.**Newcastle and Gateshead Water Bill.**Plymouth Corporation Bill.**Pontypool Gas and Water Bill.**South Leicester Fen Water Bill.**Stockton and Middlesbrough Water Bill.**Tunbridge Wells Improvement Bill.**Warrington Extension Water and Improvement Bill.**Wissenden Reservoir Bill.*

AMALGAMATION OF RAILWAYS.

*Amalgamation of
Railways.*

The following Bills contain provisions for the Amalgamation of certain Railway Companies, or for the Sale or Lease of certain Railways:—

The Belfast and Northern Counties Railway Bill provides for the amalgamation of the undertaking of the Carrickfergus and Larne Railway Company with that of the Belfast and Northern Counties Railway Company.

The Caledonian Railway (Acquisition of the Glasgow and South Western Railway, &c.) Bill proposes to enable the Caledonian Railway Company to acquire the undertaking of the Glasgow and South Western Railway Company; and to confer on the North British Railway Company the option of becoming joint owners of that undertaking.

The Great Eastern and Hunstanton and West Norfolk Railway Companies Bill provides for the sale and transfer to the Great Eastern Railway Company of the undertaking of the Hunstanton and West Norfolk Railway Company.

The Great Northern Railway Bill proposes to confirm an agreement for vesting the undertaking of the Spilsby and Firsby Railway Company in that of the Great Northern Railway Company.

The Great Western Railway Bill provides for vesting the undertaking of the Whitland and Cardigan Railway Company in that of the Great Western Railway Company.

The Leeds and Liverpool Canal Bill would enable the Canal Company (Section 85) to demise and lease to any Company or person competent to accept the demise or lease of the Canal, or any part thereof, for any period not exceeding 60 years.

The Manchester, Sheffield, and Lincolnshire Railway Bill proposes to confirm an agreement for the maintenance, use, and management of the Wrexham, Mold, and Connah's Quay Railway.

The Mersey Railway Bill proposes to enable the Mersey Railway Company to enter into agreements for the acquisition of the whole or any portion of the Wirral Railway, and of the Seacombe, Hoylake, and Dee-side Railway.

The Metropolitan Railway Bill provides for vesting the undertaking of the Aylesbury and Buckingham Railway Company in that of the Metropolitan Railway Company.

The Midland Railway Bill provides for vesting the undertaking of the Bristol Port Railway and Pier Company in those of the Midland Railway Company and the Great Western Railway Company.

The Midland Great Western Railway of Ireland Bill proposes to enable the Midland Great Western of Ireland Railway Company to acquire the undertaking of the Great Northern and Western of Ireland Railway Company at present held by them under lease.

The

The North British and Glasgow and South Western Railway Companies Bill provides for the amalgamation of the Glasgow and South Western Railway Company with the North British Railway Company; to dissolve the undertaking of the City of Glasgow Union Railway Company, at present held in equal moieties in the two Companies, and to vest it in the amalgamated Company; to extend the running powers conferred upon the Midland Railway Company by the Forth Bridge Railway Act, 1878, to the whole of the North British Company's undertaking between Carlisle and Perth and between Carlisle and Dundee.

*Amalgamation of
Railways.*

The Waterford and Limerick Railway Bill proposes to enable the Company to purchase the undertaking of the Athenry and Ennis Junction Railway Company.

The Waterford and Limerick and Athenry and Ennis Junction Railways Bill proposes to vest the undertaking of the Athenry and Ennis Junction Railway Company in that of the Waterford and Limerick Railway Company.

It may be observed that two of the above Bills, one by the Caledonian Railway Company, and one by the North British Railway Company, propose amalgamation with the Glasgow and South Western Railway Company, whilst the remainder of these Bills provide for the amalgamation or closer union of some of the larger companies, in England and Ireland, with certain companies whose railways are at present worked by them under lease or some other arrangement.

Board of Trade, }
February 1890. }

Henry G. Calcraft.

REPORT by the BOARD of TRADE upon all the
RAILWAY, CANAL, TRAMWAY, GAS, ELECTRIC
LIGHTING, and WATER BILLS of Session
1890; together with STATEMENTS relating
to Applications to the Board of Trade for
PROVISIONAL ORDERS for TRAMWAYS, and
GAS and WATER and ELECTRIC LIGHTING.

(*Sir Michael Hicks Beach.*)

Ordered, by The House of Commons, to be Printed,
14 February 1890.

[*Price 5½ d.*]

RAILWAY RETURNS
FOR
ENGLAND AND WALES,
SCOTLAND,
AND
IRELAND.
For the Year 1889.

Pursuant to the Act 34 & 35 Vict. cap. 78.

WITH SUMMARY TABLES FOR UNITED KINGDOM
For each Year from 1854 to 1889, &c.

Presented to both Houses of Parliament by Command of Her Majesty.



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PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY.

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1890.

[C.-6118.] *Price 1s.*

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COMMERCIAL DEPARTMENT, BOARD OF TRADE,
Whitehall Gardens, June 1890.

R. GIFFEN.

The following Companies had not made returns at the time of going to press, and the question of proceeding against them has been referred to the Solicitor :—

Colchester, Stour Valley, Sudbury and Halstead ; Felixstowe Dock and Railway ; Forest of Dean Central ; and Terrington and Walpole Tramroads.

and returns could not be furnished for the following railways, as the half-yearly meetings had not been held at the time the Return was sent to press :—

Bridgwater ; Eastern and Midlands ; and Pontypridd, Caerphilly, and Newport.

Note.—In order to exhibit the Traffic of Season Ticket Passengers on a uniform Plan, the Companies were requested to divide the Number of Tickets issued for shorter periods than a Year by the number of such periods in a Year, and to return the result arrived at as the equivalent number of Annual Season Tickets issued. In the case of Companies which have adopted this suggestion the Numbers given are distinguished in the Return by a Note.

SUMMARY TABLE for UNITED

LENGTH of LINES, CAPITAL, PASSENGERS CONVEYED,

YEAR.	LENGTH OF LINE OPEN FOR TRAFFIC AT THE END OF EACH YEAR.			CAPITAL AUTHORISED.			CAPITAL PAID UP.						
	Double or more.	Single.	TOTAL	By Shares and Stock.	By Loans and Debenture Stock.	TOTAL.	Ordinary.	Guaranteed.	Pre-ferential.	Loans.	Debenture Stock.	TOTAL.	Per Mile of Line open.
	Miles.	Miles.	Miles.	£	£	£	£	£	£	£	£	£	£
1854	6,103	1,950	8,053	276,000,577	92,383,731	368,384,308	166,030,806	49,877,952		70,660,036	Cannot be given for these years.	286,068,794	35,523
1855	6,153	2,182	8,335	280,628,621	94,343,345	374,971,966	169,605,442	52,818,026		75,161,241		297,584,709	35,703
1856	6,266	2,444	8,710	282,890,751	94,877,156	377,767,907	173,446,109	56,789,558		77,359,419		307,595,086	35,315
1857	6,357	2,682	9,039	288,013,644	99,038,090	387,051,734	178,624,394	58,126,627		78,406,237		315,157,258	34,866
1858	—	—	9,542	292,248,276	100,434,479	392,682,755	181,837,761	61,854,647		81,683,179		325,375,507	34,099
1859	—	—	10,002	285,434,181	98,282,170	383,716,351	184,560,019	63,555,179		80,628,116	5,619,614	334,362,928	33,430
1860	6,690	3,743	10,433	298,685,142	100,729,655	399,414,827	190,790,867	67,873,840		81,888,546	7,576,874	348,130,127	33,368
1861	6,893	3,972	10,865	322,369,654	107,503,292	429,872,946	193,591,991	73,784,336		87,144,443	7,806,568	362,327,338	33,349
1862	7,009	4,542	11,551	338,777,276	111,819,462	450,596,738	197,077,589	87,792,380		89,683,373	10,665,096	385,218,438	33,349
1863	7,270	5,052	12,322	355,700,795	119,298,750	474,999,545	204,597,267	97,496,291		89,641,525	12,430,729	404,215,802	32,804
1864	7,402	5,387	12,789	390,413,137	130,109,197	520,522,334	214,947,054	104,647,626		93,075,392	13,049,541	425,719,613	33,288
1865	7,593	5,786	13,289	432,889,245	143,402,418	576,291,663	219,598,196	124,263,475		97,821,097	13,795,375	455,478,143	34,275
1866	7,711	6,143	13,854	466,151,633	154,412,773	620,564,406	238,245,629	134,455,098		105,065,868	14,105,594	481,872,184	34,782
1867	7,844	6,403	14,247	481,447,440	161,405,968	642,853,408	233,023,854	143,209,357		110,392,559	15,637,117	502,262,887	35,254
1868	—	—	14,628	455,895,068	159,550,550	*615,445,618	224,133,427	£ 28,891,356	£ 124,940,707	108,423,865	25,236,500	511,880,855	34,979
1869	—	—	†15,145	449,087,573	160,180,080	609,267,653	226,788,133	25,208,671	130,553,989	101,729,398	34,504,670	§518,779,761	34,254
1870	—	—	†15,537	437,963,372	158,215,010	596,178,382	229,282,150	36,188,320	122,503,764	90,713,779	51,220,660	§520,908,673	34,106
1871	8,838	7,038	15,376	451,898,908	163,827,982	615,726,890	230,234,053	64,552,793	108,496,620	82,095,545	67,282,535	552,661,551	35,943
1872	8,512	7,302	15,814	472,419,873	172,169,480	644,589,353	239,039,089	63,004,313	114,760,361	66,224,217	85,981,511	§569,047,346	35,934
1873	8,687	7,395	16,082	497,922,723	178,763,803	676,686,586	244,449,805	66,187,541	121,939,528	55,888,314	99,855,120	588,820,308	36,574
1874	8,749	7,700	16,449	518,980,250	185,358,049	704,338,299	248,523,241	71,207,480	129,723,149	49,266,070	111,170,991	609,895,931	37,078
1875	8,898	7,760	16,658	529,900,023	187,875,675	717,775,698	254,000,732	77,912,315	134,231,009	40,429,754	123,008,684	680,223,404	37,833
1876	9,169	7,703	16,872	549,085,705	192,706,822	741,802,527	262,003,883	89,779,671	148,123,321	32,552,415	134,745,486	§68,214,776	§§ 39,012
1877	9,235	7,842	17,077	559,699,466	197,687,362	757,386,828	265,011,233	73,365,705	163,682,443	28,874,406	143,095,163	674,059,048	39,472
1878	9,412	7,921	17,333	579,372,262	199,500,310	778,872,572	265,675,340	56,121,162	172,405,984	24,386,996	149,865,672	§§ 696,545,154	§§ 40,301
1879	9,671	8,025	17,696	586,693,445	202,898,130	789,591,575	266,914,656	88,235,296	182,483,758	22,451,416	156,918,353	717,003,469	40,518
1880	9,803	8,130	17,933	596,248,649	205,765,355	802,014,004	270,496,503	91,004,931	185,036,783	18,728,424	163,680,207	728,816,848	40,613
1881	9,873	8,302	18,175	617,998,501	213,128,751	831,127,312	275,935,004	92,076,563	192,889,091	17,079,636	167,547,058	§745,528,162	§§ 41,019
1882	10,044	8,413	18,467	633,605,119	224,105,386	857,711,005	283,574,023	93,935,014	201,114,958	17,042,059	172,533,511	767,899,870	41,005
1883	10,106	8,576	18,681	671,899,467	233,001,674	**904,901,141	293,437,108	94,672,823	200,888,198	15,323,505	189,599,680	764,621,812	42,017
1884	10,239	8,625	18,864	681,414,345	238,641,685	**920,106,030	298,983,446	95,603,618	205,809,284	14,793,420	186,274,654	801,464,867	42,486
1885	10,446	8,723	19,169	686,333,835	241,360,163	**927,743,988	302,254,739	96,021,414	212,107,749	13,856,875	192,117,258	815,868,055	42,561
1886	10,528	8,804	19,332	693,695,305	243,070,235	941,765,540	305,202,082	97,082,467	217,969,177	12,833,579	195,856,949	828,344,254	42,848
1887	10,592	8,986	19,578	705,509,916	246,128,092	951,638,008	314,795,317	97,372,702	221,451,683	12,422,594	199,929,358	845,971,654	43,210
1888	10,772	9,040	19,812	718,201,513	252,362,643	970,564,156	322,338,446	97,706,609	225,798,210	11,091,289	207,761,409	864,695,963	43,645
1889	††10,853	9,060	19,913	726,270,010	255,897,184	982,167,194	326,229,558	98,036,515	229,410,112	9,603,711	213,315,270	876,505,166	43,955

* The authorised capital of several companies, having merely a nominal existence, has been omitted in 1868 and subsequent years.

† Number of miles constructed.

‡ Including 37,854. Capitalized Rentcharge.

§ Stock and Share Capital received.

†† See also Table No. 2 A, pp. 58 and 64.

§§ There was a large nominal increase in the capital of some companies from the consolidation of stocks.

** Including 50,000, which may be raised by Ordinary Capital or Debenture Stock.

KINGDOM in each Year from 1854 to 1889.

GROSS and NET RECEIPTS, and WORKING EXPENSES.

NUMBER of PASSENGERS conveyed, exclusive of Season Ticket Holders.	GROSS RECEIPTS.										WORKING EXPENDITURE.		NET RECEIPTS.		YEAR.				
	FROM PASSENGER TRAFFIC.††		FROM GOODS TRAFFIC.		TOTAL FROM TRAFFIC.			MISCELLANEOUS.		TOTAL from all Sources.	Total.	Pro- portion to Total Re- ceipts.	Total.	Pro- portion to Total paid up Capital.					
	Total.	Pro- portion to Total Re- ceipts.	Total.	Pro- portion to Total Re- ceipts.	Total.	Per Mile of Line open.	Per Train Mile.	Rents, Tolls, Navi- gation, Steam- boats, &c.	Pro- portion to Total Re- ceipts.										
No.	£	Per Cent.	£	Per Cent.	£	£	s. d.	£	Per Cent.	£	£	Per Cent.	£	Per Cent.					
111,180,165	10,244,954	50·68	9,970,770	49·32	20,215,724	2,510	5 6½	Cannot be given for these years.	—	—	—	—	—	—	1854				
118,567,170	10,694,790	49·73	10,812,809	50·27	21,507,599	2,580	5 0½								1855				
129,015,196	11,376,337	49·11	11,789,156	50·89	23,165,493	2,660	5 11½								1856				
138,971,240	11,888,219	49·18	12,286,392	50·82	24,174,611	2,674	5 9½								1857				
139,141,135	11,697,906	48·83	12,258,845	51·17	23,956,751	2,511	5 6								1858				
149,757,294	12,537,493	48·70	13,206,009	51·30	25,743,502	2,574	5 6								1859				
163,435,678	13,085,756	47·13	14,080,866	52·87	27,766,622	2,661	5 5								13,187,368	47	14,579,254	4·19	1860
173,721,139	13,326,475	46·65	15,238,880	53·35	28,565,355	2,629	5 5								13,843,337	48	14,722,018	4·06	1861
180,429,071	13,911,985	47·76	15,216,573	52·24	29,128,558	2,522	5 4½								14,268,409	49	14,860,149	3·86	1862
204,635,075	14,521,528	46·61	16,634,869	53·39	31,156,397	2,529	5 4								15,027,234	48	16,129,163	3·99	1863
229,272,165	15,684,040	46·11	18,331,524	53·89	34,015,564	2,660	5 3	16,000,308	47	18,015,256	4·23	1864							
251,862,715	16,572,051	46·17	19,318,062	53·83	35,890,113	2,701	5 1½	17,149,073	48	18,741,040	4·11	1865							
274,293,068	17,395,925	45·58	20,768,429	54·42	38,164,354	2,755	5 4	18,811,673	49	19,352,681	4·02	1866							
287,988,113	17,935,834	45·43	21,544,365	54·57	39,479,999	2,771	5 3½	19,848,952	50	19,631,047	3·91	1867							
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1868				
312,759,053	18,311,504	44·06	22,263,817	52·15	41,075,321	2,712	5 2½	1,620,006	3·80	42,695,927	20,780,078	49	21,915,849	4·22	1869				
336,545,307	19,301,911	42·82	24,115,159	53·50	43,417,070	2,794	5 1½	1,661,073	3·68	45,078,143	21,715,525	48	23,362,618	4·41	1870				
375,220,754	20,622,580	42·18	26,484,978	54·17	47,107,558	3,064	5 3	1,785,222	3·65	48,892,780	23,152,860	47	25,739,920	4·66	1871				
422,874,822	22,287,555	41·87	29,016,559	54·60	51,304,114	3,244	5 4½	1,931,396	3·63	53,235,510	26,277,040	49	26,957,870	4·74	1872				
455,320,188	23,853,892	41·31	31,821,529	55·11	55,675,421	3,462	5 7½	2,061,579	3·58	57,742,000	30,752,848	53	26,989,152	4·50	1873				
477,340,411	24,893,615	42·01	32,005,883	54·01	56,899,408	3,459	5 8	2,356,217	3·98	59,255,715	32,612,712	55	26,643,003	4·37	1874				
506,975,234	25,714,681	41·99	33,268,073	54·33	58,982,753	3,541	5 7½	2,254,247	3·68	61,237,000	33,220,728	54	28,016,272	4·45	1875				
534,494,069	26,163,551	42·05	33,754,317	54·25	59,917,868	3,551	5 6½	2,297,907	3·69	62,215,775	33,635,509	54	28,680,266	4·36	1876				
549,541,325	26,534,110	42·13	34,109,047	54·17	60,644,057	3,551	5 6½	2,329,271	3·70	62,973,328	33,857,978	54	29,115,350	4·32	1877				
565,024,455	26,880,614	42·78	33,564,761	53·89	60,454,375	3,488	5 5½	2,408,299	3·83	62,862,674	33,189,368	53	29,673,306	4·25	1878				
562,732,890	25,915,585	41·95	33,479,697	54·19	59,395,282	3,356	5 3	2,381,421	3·86	61,776,703	32,045,273	52	29,731,430	4·15	1879				
608,385,025	27,200,464	41·53	35,761,303	54·60	62,961,767	3,511	5 2½	2,529,868	3·86	65,491,625	33,601,124	51	31,890,501	4·38	1880				
623,047,787	27,461,645	41·26	36,446,592	54·76	63,908,237	3,316	5 1½	2,649,205	3·98	66,557,442	34,602,616	52	31,954,826	4·29	1881				
654,338,295	28,796,813	41·51	37,740,315	54·40	66,537,128	3,605	5 2	2,839,996	4·09	69,377,124	36,170,436	52	33,206,688	4·32	1882				
683,718,137	29,508,733	41·53	38,701,319	54·46	68,210,052	3,651	5 1	2,852,218	4·01	71,062,270	37,368,562	53	33,693,708	4·29	1883				
694,991,860	30,030,450	42·58	37,670,592	53·42	67,701,042	3,589	5 0	2,821,601	4·00	70,622,643	37,217,197	53	33,305,446	4·10	1884				
697,213,031	29,773,022	42·80	36,871,945	53·01	66,644,967	3,477	4 10	2,910,807	4·19	69,555,774	36,787,957	53	32,767,817	4·02	1885				
725,664,390	30,244,938	43·46	30,370,439	52·26	66,615,377	3,446	4 10	2,976,576	4·28	69,591,953	30,518,247	52	33,073,706	3·99	1886				
733,678,531	30,573,287	43·09	37,341,299	52·04	67,914,586	3,469	4 10	3,028,790	4·27	70,943,376	37,063,266	52	33,880,110	4·00	1887				
742,499,104	30,984,090	42·51	38,755,780	53·16	69,739,870	3,520	4 9½	3,154,795	4·33	72,894,605	37,762,107	52	35,132,558	4·06	1888				
775,183,073	32,650,724	42·36	41,086,333	53·34	73,717,067	3,696	4 10½	3,307,960	4·30	77,025,017	40,094,116	52	36,930,901	4·21	1889				

†† Cannot be given for this year, several Companies having omitted to make the necessary returns.

†† Including Receipts from Season Tickets, Carriages, Horses, &c., and Post Office Mails.

† The returns for the Great Western Railway Company for this year were for eleven months only, the Company having changed the date to which its accounts were made up.

SUMMARY TABLES FOR ENGLAND AND WALES

No. 1.—AMOUNT of ORDINARY, GUARANTEED, and PREFERENTIAL STOCK and SHARE CAPITAL of RAILWAYS of the Years 1885, 1886, 1887, 1888, and 1889.

RATE per CENT. of DIVIDEND PAID.	ENGLAND AND WALES. - - - -						
	ORDINARY.						
	1885.	1886.	1887.	1888.	1889.	1885.	1886.
Capital of New Companies the Lines of which were in course of construction :	£	£	£	£	£	£	£
No Dividend paid - - -	1,752,113	1,210,577	1,485,698	1,726,597	1,729,608	—	—
3 per Cent. paid - - -	—	—	108,576	184,372	—	—	—
3½ " " - - -	—	—	—	141,945	214,252	—	—
4 " " - - -	—	—	2,514,503	2,067,382	2,279,518	—	—
5 " " - - -	—	24,648	38,167	22,353	24,247	—	—
Capital of Constructed Lines upon which no Dividend was Paid - - - }	36,408,452*	36,971,398†	38,578,861	38,241,887	35,284,371	98,615	—
Dividends Paid:							
Not exceeding 1 per Cent. - -	607,352	812,758	826,100	826,161	2,218,530	—	—
Exceeding 1 and not exceeding 2 per Cent. - - }	14,531,333	5,009,995	1,980,469	2,485,065	1,103,367	101,180	101,180
" 2 and not exceeding 3 per Cent. - - }	7,938,815	15,142,526	22,599,509	26,900,249	23,377,431	—	—
" 3 and not exceeding 4 per Cent. - - }	34,366,962	26,248,624	13,005,389	8,837,003	9,200,672	40,815,679	41,715,200
" 4 and not exceeding 5 per Cent. - - }	32,167,670	65,530,243	67,307,272	41,163,740	47,508,037	36,218,341	36,201,600
" 5 and not exceeding 6 per Cent. - - }	80,661,937	59,352,929	70,925,803	75,840,115	53,678,056	4,003,580	4,003,580
" 6 and not exceeding 7 per Cent. - - }	37,276,154	38,796,545	38,047,141	61,885,503	20,504,572	—	2,000,000
" 7 and not exceeding 8 per Cent. - - }	3,577,800	2,910,000	3,685,800	3,032,800	67,413,652	13,567	9,100,000
" 8 and not exceeding 9 per Cent. - - }	48,000	648,325	677,958	—	3,509,510	—	—
" 9 and not exceeding 10 per Cent. - - }	1,142,312	477,326	477,326	691,160	—	50,000	50,000
" 10 and not exceeding 11 per Cent. - - }	—	—	—	—	—	—	—
" 11 and not exceeding 12 per Cent. - - }	—	1,678,000	—	—	—	—	—
" 12 and not exceeding 13 per Cent. - - }	30,000	30,000	30,000	—	179,534	—	—
At 13½ per Cent. - - -	1,675,866	—	1,678,000	—	—	—	—
" 15 " - - -	—	—	—	1,794,840	—	—	—
TOTAL ENGLAND AND WALES	252,164,766	254,843,894	263,966,572	265,841,172	268,225,357	81,300,962	82,082,700

* Including 300,000£ upon which interest does not accrue until 1st January 1886.

† " 414,570£.

‡ This amount is in the hands of the Metropolitan District Railway Company.

SCOTLAND, AND IRELAND, FOR THE YEARS 1885 to 1889.

COMPANIES in ENGLAND and WALES, classed according to the Rate per Cent. of Dividend Paid, in each
 1886, 1887, 1888, and 1889.

ENGLAND AND WALES.								RATE per CENT. of DIVIDEND PAID.
GUARANTEED.			PREFERENTIAL.					
1887.	1888.	1889.	1885.	1886.	1887.	1888.	1889.	
£	£	£	£	£	£	£	£	Capital of new Companies the Lines of which were in course of construction :
—	—	—	242,662	101,228	22,301	307,605	350,630	No Dividend paid.
—	—	—	—	—	—	—	—	3 per Cent. paid.
—	—	—	—	—	—	—	—	3½ " "
—	—	—	—	—	1,830,498	2,970,790	2,392,751	4 " "
—	—	—	—	—	22,550	38,820	—	5 " "
—	36,200†	36,200†	11,645,083§	11,601,437	11,227,714¶	10,015,427	10,680,788	{ Capital of Constructed Lines upon which no Dividend was paid.
—	—	—	125,000	114,250	1,650,000	1,650,000	370,000	Dividends Paid : Not exceeding 1 per Cent.
101,180	101,180	101,180	185,760	183,000	62,550	233,000	105,770	{ Exceeding 1 and not exceed- ing 2 per Cent.
—	—	—	1,916,386	1,875,446	431,404	760,634	1,377,403	{ " 2 and not exceed- ing 3 per Cent.
1,702,377	41,654,666	41,650,039	87,050,939	105,131,788	107,685,723	121,373,886	126,054,351	{ " 3 and not exceed- ing 4 per Cent.
3,436,815	36,466,734	36,460,111	65,355,776	52,527,168	51,095,661	40,114,354	40,081,548	{ " 4 and not exceed- ing 5 per Cent.
4,003,580	4,003,580	4,003,580	2,996,446	2,992,426	2,962,146	2,992,426	2,360,995	{ " 5 and not exceed- ing 6 per Cent.
—	—	—	—	—	—	—	—	{ " 6 and not exceed- ing 7 per Cent.
5,967	2,000	—	—	—	—	—	13,540	{ " 7 and not exceed- ing 8 per Cent.
—	200	2,000	—	40,000	40,000	—	—	{ " 8 and not exceed- ing 9 per Cent.
50,000	50,000	50,000	40,000	—	—	40,000	—	{ " 9 and not exceed- ing 10 per Cent.
—	—	—	—	—	—	—	—	{ " 10 and not exceed- ing 11 per Cent.
—	—	—	—	165,000	—	—	—	{ " 11 and not exceed- ing 12 per Cent.
—	—	—	—	—	—	—	165,000	{ " 12 and not exceed- ing 13 per Cent.
—	—	—	165,000	—	165,000	—	—	At 13½ per Cent.
—	—	—	—	—	—	165,000	—	" 15 "
2,299,919	82,314,560	82,303,110	169,723,052	174,731,743	177,195,547	180,661,942	183,952,776	TOTAL ENGLAND AND WALES.

§ Including 1,000,000*l.* and 397,563*l.* upon which interest does not accrue until 1st January 1886 and 1st January 1887 respectively.

|| " 741,751*l.* upon which interest does not accrue until 1st January 1887.

¶ " 200,000*l.* " " " 1st January 1888, and 665,042*l.* on which interest does not accrue until
 1st July 1888.

SUMMARY TABLES FOR ENGLAND AND WALES, SCOTLAND,

No. 2.—AMOUNT of ORDINARY, GUARANTEED, and PREFERENTIAL STOCK and SHARE CAPITAL of RAILWAY
Years 1885, 1886,

RATE per CENT. of DIVIDEND PAID.	SCOTLAND - - - - -						
	ORDINARY.						
	1885.	1886.	1887.	1888.	1889.	1885.	1886.
	£	£	£	£	£	£	£
Capital of New Companies the Lines of which were in course of construction:							
No Dividend paid - - -	676,795	171,499	197,591	850	32,199	—	—
4 per Cent. paid - - -	1,099,546	1,200,000	1,750,000	1,825,440	2,125,000	—	—
5 " " - - -	—	6,337	4,264	—	—	—	—
Capital of Constructed Lines upon which no Dividend was paid - - - }	7,014,595	4,475,633	4,539,804	4,757,582	4,910,002	—	—
Dividends paid:							
Not exceeding 1 per Cent. - - -	980,132	3,597,457	2,794,325	371,840	200,000	—	—
Exceeding 1 and not exceeding 2 } per Cent. - - - }	111,650	171,650	1,220,782	8,771,135	1,081,782	—	—
" 2 and not exceeding 3 } per Cent. - - - }	5,225,869	5,241,916	2,514,614	649,047	13,971,741	—	—
" 3 and not exceeding 4 } per Cent. - - - }	17,641,578	18,234,418	20,411,821	12,008,855	7,523,968	12,785,376	12,845,678
" 4 and not exceeding 5 } per Cent. - - - }	325,000	285,000	325,000	11,154,802	296,000	614,000	614,000
" 5 and not exceeding 6 } per Cent. - - - }	274,950	314,950	274,950	349,950	11,210,277	116,000	116,000
" 6 and not exceeding 7 } per Cent. - - - }	140,890	140,890	140,890	140,890	140,890	—	—
" 7 and not exceeding 8 } per Cent. - - - }	—	—	—	—	—	—	—
" 8 and not exceeding 9 } per Cent. - - - }	—	—	—	—	—	—	—
" 9 and not exceeding 10 } per Cent. - - - }	—	—	—	—	—	—	—
" 10 and not exceeding 11 } per Cent. - - - }	—	—	—	—	—	—	—
" 11 and not exceeding 12 } per Cent. - - - }	—	—	—	—	—	—	—
" 12 and not exceeding 13 } per Cent. - - - }	—	—	—	—	—	—	—
At 15 per Cent. - - -	—	—	—	—	—	—	—
TOTAL SCOTLAND - - -	33,491,005	33,839,750	34,174,041	40,029,891	41,491,850	13,515,376	13,575,678

AND IRELAND FOR THE YEARS 1885 TO 1889—continued.

COMPANIES in SCOTLAND, classed according to the Rate per Cent. of Dividend paid, in each of the 1887, 1888, and 1889.

SCOTLAND.								RATE per CENT. of DIVIDEND PAID.
GUARANTEED.			PREFERENTIAL.					
1887.	1888.	1889.	1885.	1886.	1887.	1888.	1889.	
£	£	£	£	£	£	£	£	
—	—	—	—	—	—	—	—	Capital of New Companies the Lines of which were in course of construction: No Dividend paid.
—	—	—	—	—	—	—	—	4 per Cent. paid.
—	—	—	—	—	—	—	—	5 " "
—	—	—	84,976	102,104	60,000	*1,109,000	*1,105,000	{ Capital of Constructed Lines upon which no Dividend was paid.
—	—	—	11,070	—	54,994	—	—	Dividends Paid: Not exceeding 1 per Cent.
—	—	—	—	11,070	11,070	55,000	66,070	{ Exceeding 1 and not exceed- ing 2 per Cent.
—	—	—	—	—	—	11,070	—	{ " 2 and not exceed- ing 3 per Cent.
12,845,694	12,875,774	12,895,934	23,241,389	23,399,188	24,926,628	24,667,691	25,927,169	{ " 3 and not exceed- ing 4 per Cent.
614,000	614,000	614,000	10,342,965	10,354,755	10,288,805	10,592,805	9,695,152	{ " 4 and not exceed- ing 5 per Cent.
116,000	116,600	116,000	638,939	638,939	638,939	638,939	638,939	{ " 5 and not exceed- ing 6 per Cent.
—	—	—	—	—	—	—	—	{ " 6 and not exceed- ing 7 per Cent.
—	—	—	—	—	—	—	—	{ " 7 and not exceed- ing 8 per Cent.
—	—	—	—	—	—	—	—	{ " 8 and not exceed- ing 9 per Cent.
—	—	—	—	—	—	—	—	{ " 9 and not exceed- ing 10 per Cent.
—	—	—	—	—	—	—	—	{ " 10 and not exceed- ing 11 per Cent.
—	—	—	—	—	—	—	—	{ " 11 and not exceed- ing 12 per Cent.
—	—	—	—	—	—	—	—	{ " 12 and not exceed- ing 13 per Cent.
—	—	—	—	—	—	—	—	At 15 per Cent.
13,575,694	13,605,774	13,625,934	34,319,339	34,506,056	35,980,436	37,074,505	37,432,330	TOTAL SCOTLAND.

* Including 1,045,000*l.* which does not carry dividend until 1st August 1890.

SUMMARY TABLES FOR ENGLAND AND WALES, SCOTLAND

No. 3.—AMOUNT of ORDINARY, GUARANTEED, and PREFERENTIAL STOCK and SHARE CAPITAL of RAILWAYS
1885, 1886, 1887,

RATE per CENT. of DIVIDEND PAID.	IRELAND						
	ORDINARY.						
	1885.	1886.	1887.	1888.	1889.	1885.	1886.
Capital of New Companies the Lines of which were in course of construction :	£	£	£	£	£	£	£
No Dividend paid - - - -	53,278	28,140	15,680	1,780	50,325	66,575	30,000
4 per Cent. paid - - - -	—	—	231	231	231	63,140	124,409
5 " " - - - -	—	—	—	—	—	47,335	97,855
Capital of Constructed Lines upon which no Dividend was Paid - - - -	2,234,771	2,063,058	2,769,991	2,467,819	2,480,930	—	3,921
Dividends Paid:							
Not exceeding 1 per Cent. - - -	715,890	715,890	61,828	288,920	221,657	—	—
Exceeding 1 and not exceeding 2 } per Cent. - - -	757,098	1,361,398	818,490	700,150	700,150	—	—
" 2 and not exceeding 3 } per Cent. - - -	3,017,420	286,500	288,000	288,000	48,000	—	—
" 3 and not exceeding 4 } per Cent. - - -	319,100	2,450,600	3,050,020	—	3,658,356	100,000	100,000
" 4 and not exceeding 5 } per Cent. - - -	8,511,859	8,643,280	8,681,488	8,347,555	7,748,135	928,026	1,067,821
" 5 and not exceeding 6 } per Cent. - - -	619,572	619,572	618,976	4,027,928	1,254,558	—	—
" 6 and not exceeding 7 } per Cent. - - -	—	—	—	—	—	—	—
" 7 and not exceeding 8 } per Cent. - - -	—	—	—	—	—	—	—
" 8 and not exceeding 9 } per Cent. - - -	—	—	—	—	—	—	—
" 9 and not exceeding 10 } per Cent. - - -	350,000	350,000	350,000	350,000	350,000	—	—
" 10 and not exceeding 11 } per Cent. - - -	—	—	—	—	—	—	—
" 11 and not exceeding 12 } per Cent. - - -	—	—	—	—	—	—	—
" 12 and not exceeding 13 } per Cent. - - -	—	—	—	—	—	—	—
At 15 per Cent. - - - -	—	—	—	—	—	—	—
TOTAL IRELAND	16,578,988	16,518,438	16,654,704	16,467,383	16,512,342	1,205,076	1,424,011

IRELAND, FOR THE YEARS 1885 to 1889—*continued*.

COMPANIES in IRELAND, classed according to the Rate per Cent. of Dividend Paid, in each of the Years 1888, and 1889:

IRELAND.								RATE per CENT. of DIVIDEND PAID.
GUARANTEED.			PREFERENTIAL.					
1887.	1888.	1889.	1885.	1886.	1887.	1888.	1889.	
£	£	£	£	£	£	£	£	
—	3,000	24,720	—	—	—	—	10,000	Capital of New Companies the Lines of which were in course of construction : No Dividend paid.
—	22,595	284,922	—	—	—	—	—	4 per Cent. paid.
—	213,450	35,000	—	—	—	—	—	5 " "
30,000	—	—	652,159	592,759	632,975	475,540	431,390	{ Capital of Constructed Lines upon which no Dividend was paid.
—	—	16,500	—	129,159	—	—	—	Dividends Paid: Not exceeding 1 per Cent.
—	—	—	129,159	62,780	129,159	—	44,150	{ Exceeding 1 and not exceed- ing 2 per Cent.
—	—	—	—	—	—	—	—	{ " 2 and not exceed- ing 3 per Cent.
326,333	349,029	263,488	4,009,984	4,301,589	4,468,275	4,430,005	4,445,210	{ " 3 and not exceed- ing 4 per Cent.
140,756	1,198,201	1,482,841	2,979,886	2,750,921	2,751,121	2,862,048	2,800,086	{ " 4 and not exceed- ing 5 per Cent.
—	—	—	294,170	294,170	294,170	294,170	294,170	{ " 5 and not exceed- ing 6 per Cent.
—	—	—	—	—	—	—	—	{ " 6 and not exceed- ing 7 per Cent.
—	—	—	—	—	—	—	—	{ " 7 and not exceed- ing 8 per Cent.
—	—	—	—	—	—	—	—	{ " 8 and not exceed- ing 9 per Cent.
—	—	—	—	—	—	—	—	{ " 9 and not exceed- ing 10 per Cent.
—	—	—	—	—	—	—	—	{ " 10 and not exceed- ing 11 per Cent.
—	—	—	—	—	—	—	—	{ " 11 and not exceed- ing 12 per Cent.
—	—	—	—	—	—	—	—	{ " 12 and not exceed- ing 13 per Cent.
—	—	—	—	—	—	—	—	At 15 per Cent.
1,497,089	1,786,275	2,107,471	8,065,358	8,131,378	8,275,700	8,061,763	8,025,006	TOTAL IRELAND.

SUMMARY TABLES FOR ENGLAND AND WALES, SCOTLAND

No. 4.—AMOUNT of ORDINARY, GUARANTEED, and PREFERENTIAL STOCK and SHARE CAPITAL of RAILWAYS
the Years 1885, 1886, 1887, 1888, and 1889.

RATE per CENT. of DIVIDEND PAID.	UNITED KINGDOM						
	ORDINARY.						
	1885.	1886.	1887.	1888.	1889.	1885.	1886.
	£	£	£	£	£	£	£
Capital of New Companies the Lines of which were in course of construction:							
No Dividend paid - - -	2,482,186	1,410,216	1,698,969	1,729,227	1,812,132	66,575	30,000
3 per Cent. paid - - -	—	—	108,576	184,372	—	—	—
3½ „ „ - - -	—	—	—	141,945	214,252	—	—
4 „ „ - - -	1,099,546	1,200,000	4,264,734	3,893,053	4,404,749	63,140	124,400
5 „ „ - - -	—	30,985	42,431	22,353	24,247	47,335	97,850
Capital of Constructed Lines upon which no Dividend was Paid - - -	*45,657,818	*43,510,089	45,888,656	45,467,288	42,675,303	98,615	3,920
Dividends Paid :							
Not exceeding 1 per Cent. - -	2,303,374	5,126,105	3,682,253	1,481,921	2,640,187	—	—
Exceeding 1 and not exceeding 2 per Cent. - -	15,400,081	6,543,043	4,019,741	11,956,350	2,885,299	101,180	101,180
„ 2 and not exceeding 3 per Cent. - -	16,182,104	20,670,942	25,402,123	27,837,296	37,397,172	—	—
„ 3 and not exceeding 4 per Cent. - -	52,327,640	46,933,642	36,467,230	20,845,358	20,382,996	53,701,055	54,660,910
„ 4 and not exceeding 5 per Cent. - -	41,004,529	74,458,523	76,313,760	60,666,097	55,552,172	37,760,367	37,883,430
„ 5 and not exceeding 6 per Cent. - -	81,556,459	60,287,451	71,819,729	80,217,993	66,142,891	4,119,580	4,119,580
„ 6 and not exceeding 7 per Cent. - -	37,417,044	38,937,435	38,188,031	62,026,393	20,645,462	—	2,000
„ 7 and not exceeding 8 per Cent. - -	3,577,800	2,910,000	3,685,800	3,032,800	67,413,652	13,567	9,160
„ 8 and not exceeding 9 per Cent. - -	48,000	648,325	677,958	—	3,509,510	—	—
„ 9 and not exceeding 10 per Cent. - -	1,492,312	827,326	827,326	1,041,160	350,000	50,000	50,000
„ 10 and not exceeding 11 per Cent. - -	—	—	—	—	—	—	—
„ 11 and not exceeding 12 per Cent. - -	—	1,678,000	—	—	—	—	—
„ 12 and not exceeding 13 per Cent. - -	30,000	30,000	30,000	—	179,534	—	—
At 13½ per Cent. - - -	1,675,866	—	1,678,000	—	—	—	—
„ 15 „ - - -	—	—	—	1,794,840	—	—	—
TOTAL UNITED KINGDOM -	302,254,759	305,202,082	314,795,317	322,338,446	326,229,558	96,021,414	97,082,460

* See notes, p. vi.

AND IRELAND, FOR THE YEARS 1885 to 1889—*continued*.

COMPANIES in the UNITED KINGDOM, classed according to the Rate per Cent. of Dividend Paid, in each of 1887, 1888, and 1889.

UNITED KINGDOM.								RATE per CENT. of DIVIDEND PAID.
GUARANTEED.			PREFERENTIAL					
1887.	1888.	1889.	1885.	1886.	1887.	1888.	1889.	
£	£	£	£	£	£	£	£	
—	3,000	24,720	242,662	101,228	22,301	307,605	360,630	Capital of New Companies the Lines of which were in course of construction: No Dividend paid.
—	—	—	—	—	—	—	—	3 per Cent. paid.
—	—	—	—	—	—	—	—	3½ " "
—	22,595	284,922	—	—	1,830,498	2,970,790	2,392,751	4 " "
—	213,450	35,000	—	—	22,550	38,820	—	5 " "
30,000	†36,200	†36,200	†12,382,218	†12,296,300	†11,920,689	11,599,967	12,217,178	{ Capital of Constructed Lines upon which no Dividend was Paid.
—	—	16,500	136,070	243,409	1,704,994	1,650,000	370,000	Dividends Paid: Not exceeding 1 per Cent.
101,180	101,180	101,180	314,919	256,850	202,779	288,000	215,990	{ Exceeding 1 and not exceed- ing 2 per Cent.
—	—	—	1,916,386	1,875,446	431,404	771,704	1,377,403	{ " 2 and not exceed- ing 3 per Cent.
54,874,404	54,879,469	54,809,461	114,302,312	132,832,565	137,080,626	150,471,582	156,426,730	{ " 3 and not exceed- ing 4 per Cent.
38,191,571	38,278,935	38,556,952	78,678,627	65,632,844	64,135,587	58,569,207	52,576,786	{ " 4 and not exceed- ing 5 per Cent.
4,119,580	4,119,580	4,119,580	3,929,555	3,925,535	3,895,255	3,925,535	3,294,104	{ " 5 and not exceed- ing 6 per Cent.
—	—	—	—	—	—	—	—	{ " 6 and not exceed- ing 7 per Cent.
5,967	2,000	—	—	—	—	—	13,540	{ " 7 and not exceed- ing 8 per Cent.
—	200	2,000	—	40,000	40,000	—	—	{ " 8 and not exceed- ing 9 per Cent.
50,000	50,000	50,000	40,000	—	—	40,000	—	{ " 9 and not exceed- ing 10 per Cent.
—	—	—	—	—	—	—	—	{ " 10 and not exceed- ing 11 per Cent.
—	—	—	—	165,000	—	—	—	{ " 11 and not exceed- ing 12 per Cent.
—	—	—	—	—	—	—	165,000	{ " 12 and not exceed- ing 13 per Cent.
—	—	—	165,000	—	165,000	—	—	At 13½ per Cent.
—	—	—	—	—	—	165,000	—	" 15 "
97,372,702	97,706,609	98,036,515	212,107,749	217,369,177	221,451,683	225,798,210	229,410,112	TOTAL UNITED KINGDOM.

† This amount is in the hands of the Metropolitan District Company.

‡ See notes, p. vii.

SUMMARY TABLES FOR ENGLAND AND WALES, SCOTLAND

No. 5.—AMOUNT of LOANS and DEBENTURE STOCK of RAILWAY COMPANIES in ENGLAND AND WALES, classed according to rate of interest.

RATE per CENT. of INTEREST.	ENGLAND AND WALES				
	LOANS.				
	1885.	1886.	1887.	1888.	1889.
Not entitled to Interest - - -	£ 8,000	£ —	£ —	£ —	£ —
Rate of Interest:					
Not exceeding 1 per Cent. - - -	—	—	—	—	—
Exceeding 1 and not exceeding 2 per Cent.	—	—	—	—	—
„ 2 and not exceeding 3 per Cent.	131,500	113,566	14,666	96,800	260,307
„ 3 and not exceeding 4 per Cent.	3,445,248	3,415,266	3,527,875	3,376,056	4,376,026
„ 4 and not exceeding 5 per Cent.	4,569,177	4,649,776	4,670,492	4,507,696	2,156,075
„ 5 and not exceeding 6 per Cent.	107,050	87,050	87,050	101,350	169,258
„ 6 and not exceeding 7 per Cent.	—	—	—	—	—
„ 7 and not exceeding 8 per Cent.	5,800	5,800	5,800	5,800	5,800
TOTAL ENGLAND AND WALES -	8,266,775	8,271,458	8,805,883	8,087,702	6,967,466

No. 6.—AMOUNT of LOANS and DEBENTURE STOCK of RAILWAY COMPANIES in SCOTLAND, classed according to rate of interest.

RATE per CENT. of INTEREST.	SCOTLAND				
	LOANS.				
	1885.	1886.	1887.	1888.	1889.
Not entitled to Interest - - -	£ —	£ —	£ —	£ —	£ —
Rate of Interest:					
Not exceeding 1 per Cent. - - -	—	—	—	—	—
Exceeding 1 and not exceeding 2 per Cent.	—	—	—	—	—
„ 2 and not exceeding 3 per Cent.	16,062	36,973	50,823	73,338	121,511
„ 3 and not exceeding 4 per Cent.	3,246,363	2,769,036	2,489,157	1,531,724	1,183,245
„ 4 and not exceeding 5 per Cent.	131,269	144,169	134,689	128,689	127,510
„ 5 and not exceeding 6 per Cent.	—	5,000	—	—	—
TOTAL SCOTLAND - - -	3,393,694	2,955,178	2,674,669	1,733,751	1,432,266

IRELAND, FOR THE YEARS 1885 to 1889—*continued*.

ing to the Rate per Cent. of Interest at which borrowed, in each of the Years 1885, 1886, 1887, 1888, and 1889.

- - - ENGLAND AND WALES.					RATE per CENT. of INTEREST.
DEBENTURE STOCK.					
1885.	1886.	1887.	1888.	1889.	
£ 578,344	£ 594,790	£ *83,270	£ —	£ —	Not entitled to Interest.
—	—	—	—	417,365	Rate of Interest : Not exceeding 1 per Cent.
151,320	178,374	131,901	131,901	131,901	Exceeding 1 and not exceeding 2 per Cent.
1,057,031	1,057,031	1,154,459	1,979,555	6,715,071	„ 2 and not exceeding 3 per Cent.
12,810,849	114,718,762	118,721,807	127,858,277	129,257,752	„ 3 and not exceeding 4 per Cent.
17,915,554	48,099,483	48,774,776	45,241,093	44,111,588	„ 4 and not exceeding 5 per Cent.
3,186,109	3,186,109	1,914,869	1,914,969	1,486,012	„ 5 and not exceeding 6 per Cent.
—	—	—	—	—	„ 6 and not exceeding 7 per Cent.
5,400	5,400	5,400	5,400	5,400	„ 7 and not exceeding 8 per Cent.
55,704,607	167,839,949	170,786,482	177,131,195	182,125,089	TOTAL ENGLAND AND WALES.

* Interest does not accrue until the 1st January 1888.

e Rate per Cent. of Interest at which borrowed, in each of the Years 1885, 1886, 1887, 1888, and 1889.

SCOTLAND.					RATE per CENT. of INTEREST.
DEBENTURE STOCK.					
1885.	1886.	1887.	1888.	1889.	
£ —	£ —	£ —	£ —	£ —	Not entitled to Interest.
—	—	—	—	—	Rate of Interest: Not exceeding 1 per Cent.
—	—	—	—	—	Exceeding 1 and not exceeding 2 per Cent.
73,537	73,537	73,537	73,538	73,538	„ 2 and not exceeding 3 per Cent.
16,205,166	17,562,971	18,399,398	19,520,473	19,845,863	„ 3 and not exceeding 4 per Cent.
2,082,187	2,082,187	2,082,187	2,082,187	2,082,187	„ 4 and not exceeding 5 per Cent.
—	—	—	—	—	„ 5 and not exceeding 6 per Cent.
18,360,890	19,718,695	20,555,122	21,676,198	22,001,588	TOTAL SCOTLAND.

SUMMARY TABLES FOR ENGLAND AND WALES

No. 7.—AMOUNT of LOANS and DEBENTURE STOCK of RAILWAY COMPANIES in IRELAND, classed according to

RATE per CENT. of INTEREST.	IRELAND - - -				
	LOANS.				
	1885.	1886.	1887.	1888.	1889.
Not entitled to Interest - - -	£ —	£ —	£ —	£ —	£ —
Rate of Interest :					
Not exceeding 1 per Cent. - - -	—	—	—	—	—
Exceeding 1 and not exceeding 2 per Cent.	—	—	—	—	—
„ 2 and not exceeding 3 per Cent.	—	—	—	—	—
„ 3 and not exceeding 4 per Cent.	1,108,437	1,089,387	1,028,542	860,851	799,361
„ 4 and not exceeding 5 per Cent.	572,169	501,756	397,700	393,185	388,811
„ 5 and not exceeding 6 per Cent.	15,800	15,800	15,800	15,800	15,800
TOTAL IRELAND - - -	1,696,406	1,606,943	1,442,042	1,269,836	1,203,971

No. 8.—AMOUNT of LOANS and DEBENTURE STOCK of RAILWAY COMPANIES in the UNITED KINGDOM, classed according to

RATE per CENT. of INTEREST.	UNITED KINGDOM - - -				
	LOANS.				
	1885.	1886.	1887.	1888.	1889.
Not entitled to Interest - - -	£ 8,000	£ —	£ —	£ —	£ —
Rate of Interest :					
Not exceeding 1 per Cent. - - -	—	—	—	—	—
Exceeding 1 and not exceeding 2 per Cent.	—	—	—	—	—
„ 2 and not exceeding 3 per Cent.	147,562	150,539	65,489	170,138	381,811
„ 3 and not exceeding 4 per Cent.	7,800,048	7,273,689	7,045,574	5,768,631	6,358,631
„ 4 and not exceeding 5 per Cent.	5,272,615	5,295,701	5,202,881	5,029,570	2,672,391
„ 5 and not exceeding 6 per Cent.	122,850	107,850	102,850	117,150	185,051
„ 6 and not exceeding 7 per Cent.	—	—	—	—	—
„ 7 and not exceeding 8 per Cent.	5,800	5,800	5,800	5,800	5,800
TOTAL UNITED KINGDOM -	13,356,875	12,833,579	12,422,594	11,091,289	9,608,711

SCOTLAND, AND IRELAND, FOR THE YEARS 1885 to 1889—*continued.*

to the Rate per Cent. of Interest at which borrowed, in each of the Years 1885, 1886, 1887, 1888, and 1889.

- IRELAND.					RATE per CENT. of INTEREST.
DEBENTURE STOCK.					
1885.	1886.	1887.	1888.	1889.	
£	£	£	£	£	Not entitled to Interest.
—	—	—	—	—	Rate of Interest:
—	—	—	—	—	Not exceeding 1 per Cent.
—	—	—	—	—	Exceeding 1 and not exceeding 2 per Cent.
291,453	291,453	291,453	291,453	291,453	„ 2 and not exceeding 3 per Cent.
4,367,256	4,641,581	4,870,001	5,626,893	5,656,173	„ 3 and not exceeding 4 per Cent.
3,393,052	3,365,321	3,426,300	3,035,670	3,240,967	„ 4 and not exceeding 5 per Cent.
—	—	—	—	—	„ 5 and not exceeding 6 per Cent.
8,051,761	8,298,305	8,587,754	8,954,016	9,188,593	TOTAL IRELAND.

according to the Rate per Cent. of Interest at which borrowed, in each of the Years 1885, 1886, 1887, 1888, and 1889.

- UNITED KINGDOM.					RATE per CENT. of INTEREST.
DEBENTURE STOCK.					
1885.	1886.	1887.	1888.	1889.	
£ 578,344	£ 594,790	£ *83,270	£ —	£ —	Not entitled to Interest.
—	—	—	—	417,365	Rate of Interest : Not exceeding 1 per Cent.
151,320	178,374	131,901	131,901	131,901	Exceeding 1 and not exceeding 2 per Cent.
1,422,021	1,422,021	1,519,449	2,344,546	7,080,062	„ 2 and not exceeding 3 per Cent.
133,383,271	136,923,264	141,991,206	153,005,643	154,759,788	„ 3 and not exceeding 4 per Cent.
53,390,793	53,546,991	54,283,263	50,358,950	49,434,742	„ 4 and not exceeding 5 per Cent.
3,186,109	3,186,109	1,914,869	1,914,969	1,486,012	„ 5 and not exceeding 6 per Cent.
—	—	—	—	—	„ 6 and not exceeding 7 per Cent.
5,400	5,400	5,400	5,400	5,400	„ 7 and not exceeding 8 per Cent.
192,117,258	195,856,949	199,929,358	207,761,409	213,315,270	TOTAL UNITED KINGDOM.

* Interest does not accrue until the 1st January 1888.

SUMMARY TABLES for ENGLAND and

No. 1.—CAPITAL

		AUTHORISED CAPITAL.			PAID-UP STOCK.	
		By Shares and Stock.	By Loans and Debenture Stock.	TOTAL.	Ordinary.	Guaranteed.
		£	£	£	£	£
ENGLAND AND WALES	- -	598,580,690	217,290,452	815,871,142	268,225,357	82,303,110
SCOTLAND	- - - -	98,543,678	27,166,423	125,710,101	41,491,859	13,625,934
IRELAND	- - - -	29,145,642	11,440,309	40,585,951	16,512,342	2,107,471
TOTAL UNITED KINGDOM		726,270,010	255,897,184	982,167,194	326,229,558	98,036,515

No. 2.—TRAFFIC

	Length of Line in Miles open on 31st December 1889.			PASSENGER TRAFFIC.					GOODS TRAFFIC.		NUMBER OF MILES TRAVELLED BY TRAINS.		
	Double or more.	Single.	Total.	Number of Passengers conveyed (exclusive of Season and Periodical Tickets).				Holders of Season or Periodical Tickets.	Minerals.	General Mer- chandise.	Passenger Trains.	Goods and Mineral Trains.	TOTAL.
				1st Class.	2nd Class.	3rd Class (includ- ing Parlia- mentary).	TOTAL.						
ENGLAND AND WALES	9,011	5,023	14,034	24,300,309	57,450,343	601,503,922	683,263,574	1,158,234	Tons. 179,996,604	Tons. 72,470,473	135,523,228	117,796,137	*253,326,186
SCOTLAND - - -	1,239	1,879	3,118	4,379,855	884,640	65,692,969	70,907,464	87,087	11,984 30,626,514	10,236,519	17,163,786	17,068,374	†35,936,712
IRELAND - - -	603	2,188	2,791	1,394,646	4,393,944	15,223,445	21,012,035	25,891	1,179,383	2,984,960	8,405,861	4,076,722	†13,354,055
TOTAL UNITED KINGDOM - }	10,853	9,090	19,943	30,074,810	62,687,927	682,420,336	775,183,073	1,271,212	211,802,561	85,691,952	161,082,875	138,941,233	§303,116,953
									11,984				

* Including 506,821 miles run by mixed trains.

† Including 1,714,552 miles run by mixed trains.

No. 3.—WORKING EXPENDITURE, NET RECEIPTS, AND ROLLING STOCK

	Length of Line in Miles open on 31st December 1889.	WORKING EXPENDITURE									
		Maintenance of Way, Works, &c.	Locomotive Power (including Stationary Engines).	Repairs and Renewals of Carriages and Waggon.	Traffic Expenses (Coaching and Merchandise).	General Charges.	Rates and Taxes.	Government Duty.	Compensation for Personal Injuries, &c.	Compensation for Damage and Loss of Goods.	
ENGLAND AND WALES	No. 14,034	£ 5,466,737	£ 9,031,518	£ 3,180,229	£ 10,628,811	£ 1,490,076	£ 1,952,620	£ 299,818	£ 160,543	£ 162,279	
SCOTLAND - - -	3,118	694,499	76,882 £ 1,002,124	£ 436,605	686 £ 1,241,835	£ 171,908	£ 197,790	£ 24,135	£ 16,422	£ 17,367	
IRELAND - - - -	2,791	404,342	£ 416,594	£ 137,413	£ 413,589	£ 89,201	£ 83,630	-	£ 69,404	£ 3,852	
			235								
TOTAL UNITED KINGDOM . . }	19,943	6,565,578	£ 10,450,236	£ 3,754,247	£ 12,284,235	£ 1,751,185	£ 2,234,040	£ 323,953	£ 246,369	£ 183,498	
			76,917		686						

SALES, SCOTLAND, and IRELAND in 1889.

No. 1.—CAPITAL.

SHARE CAPITAL.		CAPITAL RAISED BY LOANS AND DEBENTURE STOCK.			TOTAL CAPITAL paid up and raised by Loans and Debenture Stock.	SUBSCRIPTIONS TO OTHER COMPANIES.
Preferential.	TOTAL Paid-up Stock and Share Capital.	Loans.	Debenture Stock.	TOTAL raised by Loans and Debenture Stock.		
£	£	£	£	£	£	£
183,952,776	534,481,243	6,967,466	182,125,089	189,092,555	723,573,798	23,757,734
37,432,330	92,550,123	1,432,266	22,001,588	23,433,854	115,983,977	1,885,782
8,025,006	26,644,819	1,203,979	9,188,593	10,392,572	37,037,391	427,596
229,410,112	653,676,185	9,603,711	213,315,270	222,918,981	876,595,166	31,071,112

No. 2.—TRAFFIC.

RECEIPTS (GROSS) FROM PASSENGER TRAFFIC.								RECEIPTS (GROSS) FROM GOODS TRAFFIC.				Miscellaneous, Rents, Tolls, Navigation, Steamboats, &c.	TOTAL RECEIPTS FROM ALL SOURCES OF TRAFFIC.
RECEIPTS FROM PASSENGERS.					Excess Luggage, Parcels, Carriages, Horses, Dogs, &c.	Mails.	TOTAL Receipts from Passenger Traffic.	Merchandise.	Live Stock.	Minerals.	TOTAL Receipts from Goods Traffic.		
1st Class.	2nd Class.	3rd Class (including Parliamentary).	Holders of Season or Periodical Tickets.	TOTAL from Passengers.									
£	£	£	£	£	£	£	£	£	£	£	£	£	£
335,937	2,330,982	16,998,718	1,942,850	23,917,487	3,288,046	568,278	27,774,284	19,245,723	879,982	14,791,828	34,917,533	2,984,152	65,075,969
					473								
380,200	46,503	2,026,624	197,528	2,650,945	466,706	186,948	3,244,599	2,464,452	207,124	2,116,465	4,788,041	275,210	8,307,850
171,300	318,249	760,102	55,590	1,305,241	160,027	146,573	1,611,341	984,188	252,702	143,374	1,380,759	48,598	3,041,198
137,527	2,704,784	19,785,444	2,195,968	27,873,673	3,854,779	901,799	32,630,724	22,694,358	1,339,808	17,052,167	41,086,333	3,307,960	77,025,017
					473								

‡ Including 871,472 miles run by mixed trains.

§ Including 3,092,845 miles run by mixed trains.

3.—WORKING EXPENDITURE, NET RECEIPTS, AND ROLLING STOCK.

WORKING EXPENDITURE.					ROLLING STOCK on 31st December 1889.							
Legal and Parliamentary Expenses.	Steamboat, Canal, and Harbour Expenses.	Miscellaneous Working Expenditure not included in the foregoing.	TOTAL Working Expenditure.	TOTAL RECEIPTS, as given in the Traffic Return, No. 2.	NET RECEIPTS.	Proportion per Cent. of Expenditure to Receipts.	Locomotives.	Carriages used for the Conveyance of Passengers only.	Other Vehicles attached to Passenger Trains.	Waggons of all kinds used for the Conveyance of Live Stock, Minerals, or General Merchandise.	Any other Carriages or Waggons used on the Railway, not included in the preceding Columns.	TOTAL NUMBER of Vehicles of all descriptions for Conveyance of Passengers, Live Stock, Ballast, &c.
£	£	£	£	£	£		No.	No.	No.	No.	No.	No.
219,296	1,430,924	355,223	*34,402,969	65,675,969	31,273,000	52	13,447	30,512	11,057	385,079	12,725	439,373
40,977	77,374	118,854	4,039,890	8,307,850	4,267,960	49	1,791	4,077	1,554	103,917	1,230	110,775
8,775	10,462	13,760	1,651,257	3,041,198	1,389,941	54	686	1,548	890	14,264	380	17,082
269,047	1,518,760	487,837	*40,094,116	77,025,017	36,930,901	52	15,924	36,137	13,501	503,260	14,335	567,233

* Exclusive of 52,472L. received by the North London Company for working other lines.



RAILWAY RETURNS.--1889.

No. 1.—C A P I T A L, &c.

RETURN of the authorised SHARE and LOAN CAPITAL of the several RAILWAY COMPANIES in ENGLAND and WALES, SCOTLAND, and IRELAND, and of their PAID-UP ORDINARY, GUARANTEED, and PREFERENTIAL CAPITAL, and DEBENTURE STOCK or FUNDED DEBT, on the 31st day of December 1889, specifying the rate per cent. of the Dividends for the year 1889 on each of the said Capitals; showing also the Loans outstanding on the 31st day of December 1889, classified according to the several rates per cent. of Interest; and the Capital subscribed to other undertakings, whether such undertakings are on lease to, or worked by, the subscribing Company, or are independent.

No. 1.—AMOUNT of CAPITAL, &c., upon the

[illegible]

31st December 1889.—ENGLAND AND WALES.

SHARE CAPITAL.				CAPITAL RAISED BY LOANS AND DEBENTURE STOCK.						TOTAL CAPITAL paid up and raised by Loans and Debenture Stock.	SUBSCRIPTIONS TO OTHER COMPANIES.	REMARKS.
Preferential.			Total Paid-up Stock and Share Capital.	Loans.		Debenture Stock.		Total raised by Loans and Debenture Stock.				
Amount.	Preferential Rate of Dividend.	Rate of Dividend paid.		Amount.	Rate of Interest.	Amount.	Rate of Interest.					
£	Per cent.	Per cent.	£	£	Per cent.	£	Per cent.	£	£	£		
515,000	4½	4½	1,123,094	—	—	295,000	4	295,000	1,418,094	—	In addition to paying interest on capital the Company paid 5,844 <i>l.</i> for Royalties.	
—	—	—	82,939	36,500	5	—	—	36,500	119,439	—		
598,760	—*	—*	1,472,611	203,400	4	70,000	4	466,225	1,938,836	—	* Interest was payable and paid out of capital on the preferential capital of the Company, at the rate of 4 per cent. per annum, up to 14th August 1889, and from that date to 31st December 1889 a dividend at the rate of 5 per cent. per annum was paid. † Capitalized value of Land Rent-charges.	
207,587	—*	—*		175,000	4½							
				17,825†	4							
—	—	—	—	—	—	—	—	—	—	—		
—	—	—	1,500	—	—	—	—	—	1,500	—		
474,178	4½	4½	2,550,000	—	—	—	—	—	2,550,000	—	* Borrowing powers assumed in equal proportions by the Companies in which the line is vested. † Calls received on forfeited shares, in respect of which no dividend is paid.	
—	—	—	800	—	—	—	—	—	800	—		
86,750	5	Nil	220,009	60,000	5	—	—	89,700	309,709	—		
				28,000	5							
				1,700	6							
—	—	—	—	—	—	—	—	—	—	—		
—	—	—	—	—	—	—	—	—	—	—		
62,550	5	5	1,117,622	14,075†	5	820,445	4	834,520	1,952,142	—	* Rumney preference shares. † Capitalized value of Land Rent-charges.	
46,500*	5	5										
111,950	5	2½										
632,262	5	Nil										
—	—	—	—	—	—	—	—	—	—	—		
—	—	—	123,696	36,731	5	—	—	41,000	164,696	—	* Capitalized value of Rent-charges.	
				4,269*	4							
—	—	—	—	—	—	—	—	—	—	—		
49,820	5	Nil	185,220	10,600	5	18,700	5	64,895	250,115	—	* Capitalized value of Land Rent-charges.	
				31,550	6							
				4,045*	5							

[illegible]

1st December 1889.—ENGLAND AND WALES—continued.

SHARE CAPITAL.				CAPITAL RAISED BY LOANS AND DEBENTURE STOCK.					TOTAL CAPITAL paid up and raised by Loans and Debenture Stock.	SUBSCRIPTIONS TO OTHER COMPANIES.	REMARKS.
Preferential.			Total Paid-up Stock and Share Capital.	Loans.		Debenture Stock.		Total raised by Loans and Debenture Stock.			
Amount.	Preferential Rate of Dividend.	Rate of Dividend paid.		Amount.	Rate of Interest.	Amount.	Rate of Interest.				
£	Per cent.	Per cent.	£	£	Per cent.	£	Per cent.	£	£	£	
1,555,617	4	Nil	2,505,475	49,928*	4	2,094,714	4	2,144,642	4,650,117	—	* Capitalized Value of Land Rentcharges.
200,000	5	$\frac{1}{2}$	806,640	—	—	32,267	4	315,706	1,122,346	—	
90,000	5	Nil				283,439	$4\frac{1}{2}$				
112,600	5	Nil									
—	—	—	70,500	26,600	6	—	—	26,600	97,100	—	
98,000	5	$1\frac{7}{8}$	494,500	—	—	—	—	—	494,500	—	* Preferred stock.
120,000	5	Nil									† Deferred stock.
—	—	—	40,270	50,208	6	—	—	50,208	90,478	—	
—	—	—	—	—	—	—	—	—	—*	—	* The Capital is provided by the three owning Companies in equal proportion, and is included in their returns.
75,000	$2\frac{1}{2}$	Nil	385,000	—	—	186,900	3	186,900	571,900	—	
—	—	—	492,269	109,355	5	—	—	109,355	601,624	—	
167,700	4	4	442,400	25,065	$3\frac{1}{2}$	—	—	138,200	580,600	—	
60,000	$4\frac{1}{2}$	$4\frac{1}{2}$		113,135	4						
—	—	—	68,676	—	—	—	—	—	68,676	—	
25,000	5	5	284,000	—	—	82,750	4	82,750	366,750	—	
—	—	—	—	—	—	—	—	—	—	—	
25,590	5	Nil	86,790	1,920*	5	367,365	$1\frac{1}{2}$	414,285	501,075	—	* Capitalized value of Land Rentcharges.
				45,000			$\frac{2}{5}$				
—	—	—	15,000	—	—	4,950	5	4,950	19,950	—	
—	—	—	—	—	—	—	—	—	—	—	
—	—	—	3,302	—	—	—	—	—	3,302	—	

Railway Companies; the Capital is included in the Returns of those Companies.

NAME OF COMPANY.	AUTHORISED CAPITAL.			PAID-UP STOCK AND DEBENTURES.					
	By Shares and Stock.	By Loans and Debenture Stock.	Total.	Ordinary.		Guaranteed.			Rate of Dividend paid.
				Amount.	Rate of Dividend paid.	Amount.	Guaranteed Rate of Dividend.	Rate of Dividend paid.	
	£	£	£	£	Per cent.	£	Per cent.	Per cent.	
Dover and Deal Committee - - -	The line is the joint property of the "London, Chatham, and Dover" and "South-								
Dowlais - - - - -	—	—	—	—	—	—	—	—	—
Dowlais Extension - - - - -	—	—	—	—	—	—	—	—	—
Downham and Stoke Ferry - - -	Leased to the Great Eastern.								
Easingwold - - - - -	12,000	4,000	16,000	—	—	—	—	—	—
East and West Junction - - - -	300,000	698,688	998,688	300,000	Nil	—	—	—	—
Evesham, Redditch, and Stratford-upon-Avon Junction.	90,000	50,000	140,000	45,000	Nil	—	—	—	—
East and West Yorkshire Union - -	900,000	300,000	1,200,000	62,198	Nil	—	—	—	—
Eastbourne, Seaford, and Newhaven -	90,000	30,000	120,000	—	—	—	—	—	—
East Cornwall Mineral (Calstock to Callington.)	60,000	20,000	80,000	30,000	Nil	—	—	—	—
Eastern and Midlands : Lynn, Yarmouth, and Norwich Section -	See note, page iii.								
Midland and Eastern Section - -	} Sold to the "Midland" and "Great Northern" Companies under Act 52 & 53 Vict. c. 39.								
Peterborough, Wisbeach, and Sutton Section.									
East Gloucestershire - - - - -	Worked by the Great Western.								
East Lincolnshire - - - - -	Leased to the Great Northern.								
East London - - - - -	3,245,000	2,579,000	5,824,000	3,240,799	Nil	—	—	—	—
Easton and Church Hope - - - -	120,000	39,900	159,900	29,727	Nil	—	—	—	—
East Usk - - - - -	72,000	24,000	96,000	2,500	Nil	—	—	—	—
Elham Valley (Light) - - - - -	Worked by the South-Eastern.								
Ely and Newmarket - - - - -	Leased to the Great Eastern.								
Ely and St. Ives - - - - -	Worked by the Great Eastern.								
Ely Valley - - - - -	Worked by the Great Western.								
Evesham, Redditch, and Stratford-upon-Avon Junction.	Worked by the East and West Junction.								
Exeter, Teign Valley, and Chagford - -	240,000	80,000	320,000	—	—	—	—	—	—
Exmouth Docks and Railway - - -	60,000	15,000	75,000	60,000	Nil	—	—	—	—
Felixstowe and Bawdsey Ferry - - -	45,000	15,000	60,000	—	—	—	—	—	—
Felixstowe Dock and Railway - - -	See note, page iii.								
Festiniog - - - - -	176,186	42,000	218,186	86,186	3	—	—	—	—
Filey Pier and Tramroad - - - -	45,000	15,000	60,000	—	—	—	—	—	—
Forcett - - - - -	34,200	11,400	45,600	34,200	5	—	—	—	—
Forest of Dean Central - - - - -	Worked by the Great Western.								
Freshwater, Yarmouth, and Newport -	Worked by the Isle of Wight Central.								
Furness - - - - -	5,271,875	1,636,566	6,908,441	2,642,000	4½	779,125	4	4	—
Garstang and Knot End - - - - -	90,000	30,000	120,000	60,000	Nil	—	—	—	—
Glyn Valley Tramway - - - - -	55,000	18,300	73,300	19,266	Nil	—	—	—	—

31st December 1889.—ENGLAND AND WALES—continued.

SHARE CAPITAL.				CAPITAL RAISED BY LOANS AND DEBENTURE STOCK.					TOTAL CAPITAL paid up and raised by Loans and Debenture Stock.	SUBSCRIPTIONS TO OTHER COMPANIES.	REMARKS.
Preferential.			Total Paid-up Stock and Share Capital.	Loans.		Debenture Stock.		Total raised by Loans and Debenture Stock.			
Amount.	Preferential Rate of Dividend.	Rate of Dividend paid.		Amount.	Rate of Interest.	Amount.	Rate of Interest.				
£	Per cent.	Per cent.	£	£	Per cent.	£	Per cent.	£	£	£	
Eastern " Companies ; the Capital is included in the Return of those Companies.											
—	—	—	—	—	—	—	—	—	—	—	The Railway is the property of the Dowlais Iron Company. There is no separate capital for the Railway.
—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	
—	—	—	300,000	—	—	399,901 268,787	5 6	668,688	968,688	—	
45,000	5	Nil	90,000	30,000	5	10,900	4	40,900	130,900	—	
—	—	—	62,198	4,956*	4½	—	—	4,956	67,154	—	* Capitalized value of Land Rentcharges.
—	—	—	—	—	—	—	—	—	—	—	
30,000	6	Nil	60,000	15,000 5,000*	5 5	—	—	20,000	80,000	—	* Capitalized value of Land Rentcharges.
—	—	—	3,240,799	—	—	250,000 172,920 544,440 381,116 624,994 575,996	2½ 3½ 4 4 4 4	2,549,466	5,790,265	—	
18,080	5	Nil	47,807	—	—	10,000	4½	10,000	57,807	—	Line in course of construction.
—	—	—	2,500	—	—	—	—	—	2,500	—	
—	—	—	—	—	—	—	—	—	—	—	
—	—	—	60,000	15,000	5	—	—	15,000	75,000	—	
—	—	—	—	—	—	—	—	—	—	—	
40,000 10,000	5 4½	5 4½	136,186	—	—	12,000	4½	12,000	148,186	—	In addition to paying interest on capital, the Company paid 1,424 <i>l.</i> for rents and tonnages.
—	—	—	—	—	—	—	—	—	—	—	
—	—	—	34,200	430 4,770 500 2,325*	4 4½ 5 5	—	—	8,025	42,225	—	* Capitalized value of Land Rentcharges.
1,750,750	4	4	5,171,875	—	—	1,569,457	4	1,569,457	6,741,332	—	
19,410	5	Nil	79,410	16,100 3,407*	5 4	—	—	19,507	98,917	—	* Capitalized value of Land Rentcharges.
22,397	5	Nil	41,663	—	—	—	—	—	41,663	—	

NAME OF COMPANY.				AUTHORISED CAPITAL.			PAID-UP STOCK AND DIVIDENDS.				
				By Shares and Stock.	By Loans and Debenture Stock.	Total.	Ordinary.		Guaranteed.		
							Amount.	Rate of Dividend paid.	Amount.	Guaranteed Rate of Dividend.	Rate of Dividend paid.
				£	£	£	£	Per cent.	£	Per cent.	Per cent.
Golden Valley - - - -				366,000	222,000	588,000	106,249	Nil	—	—	—
Gorsedda Junction and Portmadoc - -				30,000	10,000	40,000	19,995	Nil	—	—	—
Great Eastern - - - -				30,603,579	14,431,300	45,034,879	12,572,850	2 $\frac{3}{4}$	5,444,550 650,000	4 5	4 5
Leased to or worked by the Great Eastern.	Colchester, Stour Valley, Sudbury, and Halstead.			See note, page iii.							
	Downham and Stoke Ferry - -			60,000	20,000	80,000	47,249	4	—	—	—
	Ely and Newmarket - -			100,000	33,333	133,333	100,000	5	—	—	—
	Ely and St. Ives - -			98,000	32,000	130,000	37,706 60,000	4 5	—	—	—
	Hunstanton and West Norfolk - -			195,000	65,000	260,000	75,000 60,000	2 $\frac{3}{16}$ 8 $\frac{3}{16}$	—	—	—
	London and Blackwall - -			2,487,180	824,000	3,311,180	1,832,125 79,748	4 $\frac{1}{2}$ 4 $\frac{1}{2}$	—	—	—
	Mellis and Eye - -			15,000	5,000	20,000	15,000	5 $\frac{1}{4}$	—	—	—
	Northern and Eastern - -			1,179,250	307,800	1,487,050	847,800 263,700	5 6	63,000 4,750	5 6	5 6
	Ramsey and Somersham Junction -			50,000	16,666	66,666	50,000	Nil	—	—	—
	Thetford and Watton - -			79,000	26,300	105,300	45,000	Nil	—	—	—
Leased to or worked by the Great Northern.	Watton and Swaffham - -			105,000	35,000	140,000	60,000	Nil	—	—	—
	Wivenhoe and Brightlingsea See also "Tottenham and Hampstead Junction."			40,000	13,000	53,000	24,955	Nil	—	—	—
	Great Marlow - - - -			18,000	6,000	24,000	8,280	4	—	—	—
	Great Northern - - - -			30,550,337	9,635,325	40,185,662	10,884,517 1,159,275 1,159,275 269,260	4 $\frac{7}{8}$ 6 3 $\frac{3}{4}$ —	—	—	—
	East Lincolnshire - -			600,000	—*	600,000	600,000	6	—	—	—
	Horncastle - - - -			48,000	13,000	61,000	48,000	7 $\frac{1}{2}$	—	—	—
	Louth and East Coast - -			144,000	94,000	238,000	95,975	Nil	—	—	—
	Muswell Hill and Palace Railway -			70,000	10,000	80,000	70,000	Nil	—	—	—
	Nottingham and Grantham Railway and Canal.			1,014,000	265,000	1,279,000	1,014,000	4 $\frac{1}{10}$	—	—	—
	Nottingham Suburban - -			250,000	83,300	333,300	247,235	3*	—	—	—
Royston and Hitchin - -			346,667	115,466	462,133	266,675	5 $\frac{1}{16}$	—	—	—	
Spilsby and Firsby - -			25,000	8,333	33,333	25,000	2 $\frac{1}{2}$	—	—	—	
Stamford and Essendine - -			140,000	46,000	186,000	46,500 75,000	1 $\frac{1}{2}$ Nil	—	—	—	
Sutton and Willoughby - -			84,000	28,000	112,000	80,362	Nil	—	—	—	
Wainfleet and Firsby - -			18,000	6,000	24,000	18,000	6 $\frac{1}{2}$	—	—	—	
Extension to Skegness See also the "Cheshire Lines Committee."			27,000	9,000	36,000	27,000	6 $\frac{1}{2}$	—	—	—	
Great North of England, Clarence, and Hartlepool Junction.				Leased to the North-Eastern.							

1st December 1889.—ENGLAND AND WALES—continued.

SHARE CAPITAL.				CAPITAL RAISED BY LOANS AND DEBENTURE STOCK.						TOTAL CAPITAL paid up and raised by Loans and Debenture Stock.	SUBSCRIPTIONS TO OTHER COMPANIES.	REMARKS.
Preferential.			Total Paid-up Stock and Share Capital.	Loans.		Debenture Stock.		Total raised by Loans and Debenture Stock.				
Amount.	Preferential Rate of Dividend.	Rate of Dividend paid.		Amount.	Rate of Interest.	Amount.	Rate of Interest.					
£	Per cent.	Per cent.	£	£	Per cent.	£	Per cent.	£	£	£		
69,000	5	Nil	175,249	—	—	159,000	5	159,000	334,249	—		
2,100	5	Nil	22,095	800 5,800	6 8	—	—	6,600	28,695	—		
894,049 8,363,798 2,249,870	2½ 4 4½	2½ 4 4½	30,175,117	82,850 133,210 219,400 188,200 5,070*	3½ 3½ 4 5 5	12,751,267 8,340 16,106 348,120	4 4½ 4½ 5	13,752,563	43,927,680	242,327	* Capitalized value of Land Rentscharges.	
—	—	—	47,249	19,200 671*	4 5	—	—	19,871	67,120	—	* Capitalized value of Land Rentscharges.	
—	—	—	100,000	8,833	4	24,500	3½	33,333	133,333	—		
—	—	—	97,706	5,000 15,000	3½ 3½	12,000	5	32,000	129,706	—		
15,000 16,000	4 4½	4 4½	166,000	—	—	20,000 25,000	4½ 5	45,000	211,000	—		
250,055	4½	4½	2,161,928	—	—	674,100	4½	674,100	2,836,028	—		
—	—	—	15,000	—	—	—	—	—	15,000	—		
—	—	—	1,179,250	—	—	—	—	—	1,179,250	—		
—	—	—	50,000	—	—	10,000	4	10,000	60,000	—	Line opened in September 1889.	
34,000	5	3½	79,000	—	—	26,300	4	26,300	105,300	—		
—	—	—	60,000	20,000	4	—	—	20,000	80,000	—		
14,640	6	4½	39,595	—	—	10,500	5	10,500	50,095	—		
9,720	5	5	18,000	—	—	6,000	4	6,000	24,000	—		
3,044,490 2,169,520 575,000	4 4 6	4 4 6	29,261,337	—	—	8,764,444 53,000	4 5	8,817,444	38,078,781	6,130,530†	* The rate in last year's return should have been 4½, not 4¼. † Subscriptions to Joint Lines 5,830,530l., and to other Companies 309,000l.	
—	—	—	600,000	—	—	—	—	—	600,000	—	* Borrowing powers (200,000l.) exercised by the Great Northern Railway Company.	
—	—	—	48,000	13,000 1,620*	4 4	—	—	14,620	62,620	—	* Capitalized value of Land Rentscharges.	
—	—	—	95,975	—	—	43,000 27,496*	4 1½	70,496	166,471	—	* Interest (not exceeding 5 per cent. per annum) is payable on this stock, but only out of the revenue of the year.	
—	—	—	70,000	—	—	9,618	4	9,618	79,618	—		
—	—	—	1,014,000	—	—	—	—	—	1,014,000	—		
—	—	—	247,235	—	—	—	—	—	247,235	—	* Rate of interest paid up to 2nd December 1889, the date of the opening of the line for traffic.	
—	—	—	266,675	—	—	—	—	—	266,675	—		
—	—	—	25,000	8,333	4	—	—	8,333	33,333	—		
15,000 3,500	4 5	4 5	140,000	—	—	16,000	4	16,000	156,000	—		
—	—	—	80,362	28,000	4½	—	—	28,000	108,362	—		
—	—	—	18,000	6,000	4	—	—	6,000	24,000	—		
—	—	—	27,000	9,000 4,112* 611*	4 4 4½	—	—	13,723	40,723	—	* Capitalized value of Land Rentscharges.	

* Capitalized value of Land Rentcharges.

* Capitalized value of Land Rentcharges.

Line opened in September 1889.

* The rate in last year's return should have been 4½, not 4¼.

† Subscriptions to Joint Lines 5,830,530£., and to other Companies 300,000£.

* Borrowing powers (200,000£.) exercised by the Great Northern Railway Company.

* Capitalized value of Land Rentcharges.

* Interest (not exceeding 5 per cent. per annum) is payable on this stock, but only out of the revenue of the year.

* Rate of interest paid up to 2nd December 1889, the date of the opening of the line for traffic.

* Capitalized value of Land Rentcharges.

NAME OF COMPANY.	AUTHORISED CAPITAL.			PAID-UP STOCK AND DIVIDENDS.					
	By Shares and Stock.	By Loans and Debenture Stock.	Total.	Ordinary.		Guaranteed.			Rate of Dividend paid.
				Amount.	Rate of Dividend paid.	Amount.	Guaranteed Rate of Dividend.	Rate of Dividend paid.	
Great Western - - -	£ 60,596,276	£ 20,821,903	£ 81,418,179*	£ 20,310,000	Per cent. 6 $\frac{3}{4}$	£ 24,901,018	Per cent. 5	Per cent. 5	
Abbotsbury - - -	64,000	21,300	85,300	51,440	Nil	—	—	—	
Abingdon - - -	20,000	5,000	25,000	15,000	7 $\frac{1}{2}$	—	—	—	
Bala and Festiniog - - -	288,000	95,900	383,900	238,000	1 $\frac{1}{2}$	—	—	—	
Banbury and Cheltenham Direct -	700,000	1,060,000	1,760,000	600,000	Nil	—	—	—	
Bridport - - -	127,000	35,600	162,600	64,431	1 $\frac{1}{2}$	—	—	—	
Buckfastleigh, Totnes, and South Devon	86,000	82,000	168,000	65,974	Nil	—	—	—	
Calne - - -	35,000	43,600	78,600	20,320	4 $\frac{1}{2}$	—	—	—	
Cornwall Minerals - - -	1,060,000	511,900	1,571,900	438,266	Nil	—	—	—	
Corwen and Bala - - -	144,000	40,000	184,000	120,000	2 $\frac{1}{2}$	—	—	—	
Devon and Somerset - - -	272,700	1,163,000	1,435,700	259,582	Nil	—	—	—	
Didcot, Newbury, and Southampton	1,080,760	315,920	1,396,680	307,034	Nil	—	—	—	
East Gloucestershire - - -	225,000	75,000	300,000	206,500	Nil	—	—	—	
Ely Valley - - -	83,000	27,300	110,300	48,000 35,000*	5 $\frac{1}{2}$ Nil	—	—	—	
Forest of Dean Central - - -	See note, page iii.								
Helston - - -	82,000	27,333	109,333	26,000	Nil	—	—	—	
Kington and Eardisley - - -	160,000	130,000	290,000	69,230	Nil	—	—	—	
Leominster and Kington - - -	122,000	39,660	161,660	59,010 42,000	4 4 $\frac{1}{2}$	—	—	—	
Llangollen and Corwen - - -	110,000	30,000	140,000	90,000	2 $\frac{1}{2}$	—	—	—	
Marlborough - - -	51,000	15,000	66,000	30,830	3 $\frac{1}{2}$	—	—	—	
Milford - - -	70,000	23,000	93,000	58,430	1 $\frac{7}{8}$	—	—	—	
Minhead - - -	60,000	—	60,000	15,000	1 $\frac{1}{2}$	—	—	—	
Much Wenlock and Severn Junction	68,000	16,000	84,000	32,650	Nil	—	—	—	

Leased to or worked by the Great Western.

RAILWAY RETURNS.—1889.

11

1st December 1889.—ENGLAND AND WALES—continued.

SHARE CAPITAL.				CAPITAL RAISED BY LOANS AND DEBENTURE STOCK.					TOTAL CAPITAL paid up and raised by Loans and Debenture Stock.	SUBSCRIPTIONS TO OTHER COMPANIES.	REMARKS.
Preferential.			Total Paid-up Stock and Share Capital.	Loans.		Debenture Stock.		Total raised by Loans and Debenture Stock.			
Amount.	Preferential Rate of Dividend.	Rate of Dividend paid.		Amount.	Rate of Interest.	Amount.	Rate of Interest.				
£	Per cent.	Per cent.	£	£	Per cent.	£	Per cent.	£	£	£	
1,507,612	5	5	56,718,630	400	3	9,817,385	4	18,229,806	74,948,436	1,180,496	* This does not include some permissive powers, which as yet have not been exercised, in relation to the borrowing powers of other Companies, and to the creation of Capital for the acquisition of, or the subscribing towards, the undertakings of other Companies; nor does it include Capital authorised to be raised jointly with other Companies. † Capitalized value of Rentcharges.
				625	3½	918,966	4½				
				3,100	4	4,487,205	4½				
				450	4½	2,884,045	5				
				300	4½						
				29,763†	4½						
				87,567†	5						
10,000	5	Nil	61,440	21,300	5	—	—	21,300	82,740	—	
450	4	4	16,050	4,600	3½	—	—	5,000	21,050	—	
600	5	5		400	4						
50,000	5	5	288,000	—	—	94,450	4	94,450	382,450	—	
96,095	5	Nil.	696,095	9,344*	5	590,656	4	1,055,434	1,751,529	—	* Capitalized value of Land Rentcharges.
						455,434	5				
23,000	4	4	111,431	21,600	4	—	—	22,590	134,021	—	* Capitalized value of Rentcharges.
4,000	5	5		990*	5						
20,000	6	6									
20,000	5	1	85,974	—	—	78,151	4	78,151	164,125	—	
—	—	—	20,820	11,600	4	—	—	42,920	63,740	—*	
				31,320	5						
560,000	4	Nil	998,266	—	—	147,000	3½	483,120	1,481,386	—	
						314,220	4				
						21,900	5				
18,000	4	4	144,000	—	—	38,095	4½	38,095	182,095	24,000	
6,000	4	4									
12,000	5	Nil	271,582	—	—	432,000	3	1,109,875	1,381,457	—	
						428,957	4				
						248,918	4				
638,819	5	Nil	945,853	87,370	4	166,000	5	300,000	1,245,853	—	By an Act of 1889 the Share and Loan Capital of the Company was reduced.
				30,630	5						
				16,000	6						
—	—	—	206,500	68,000	4½	—	—	68,400	274,900	—	* Capitalized value of Land Rentcharges.
				400*	4½						
—	—	—	83,000	—	—	6,000	4	21,000	104,000	—	* Amount held by the Great Western Railway Company on which no dividend is paid.
						15,000	4½				
56,000	3½	Nil	82,000	—	—	27,333	5	27,333	109,333	—	
64,941	4	Nil	134,171	—	—	129,288	4	129,288	263,459	—	
20,990	4½	4½	122,000	13,850	3½	—	—	39,000	161,000	—	
				25,150	4						
20,000	4	4	110,000	—	—	29,820	4½	29,820	139,820	20,000	
4,800	6	6	35,630	4,500	4	8,365	3½	14,965	50,595	—	* Capitalized value of Land Rentcharges.
				2,100*	5						
—	—	—	58,430	1,600	4	12,600	4	14,200	72,630	—	
45,000	4½	4½	60,000	—	—	—	—	—	60,000	—	
20,000	4½	4½	67,650	11,000	4½	—	—	11,000	78,650	20,000	
15,000	5	4½									

31st December 1889.—ENGLAND AND WALES—continued.

SHARE CAPITAL.				CAPITAL RAISED BY LOANS AND DEBENTURE STOCK.						TOTAL CAPITAL paid up and raised by Loans and Debenture Stock.	SUBSCRIPTIONS TO OTHER COMPANIES.	REMARKS.
Preferential.			Total Paid-up Stock and Share Capital.	Loans.		Debenture Stock.		Total raised by Loans and Debenture Stock.				
Amount.	Preferential Rate of Dividend.	Rate of Dividend paid.		Amount.	Rate of Interest.	Amount.	Rate of Interest.					
£	Per cent.	Per cent.	£	£	Per cent.	£	Per cent.	£	£	£		
—	—	—	120,000	8,200 16,620	3½ 4	—	—	24,820	144,820	—		
—	—	—	160,000	8,500	5	—	—	8,500	168,500	—		
—	—	—	70,000	—	—	28,500	4	28,500	98,500	—		
—	—	—	59,960	19,900	4½	—	—	19,900	79,860	—		
—	—	—	109,500	—	—	—	—	—	109,500	—		
80,000	6	6	160,000	47,300 5,434*	4 5	—	—	52,734	212,734	—	* Capitalized value of Land Rentcharges.	
35,000	4	Nil	120,000	—	—	40,000	4½	40,000	160,000	—		
72,000	5	Nil	87,510	—	—	64,250	4	64,250	151,760	—		
—	—	—	64,640	21,166	4	—	—	21,166	85,806	—		
12,000	4	4	83,200	—	—	22,447	4½	22,447	105,647	12,000		
26,500	5	5										
—	—	—	59,862	2,830	4	—	—	2,830	62,692	—		
25,000	5	5	125,000	34,600 400 6,471†	4 4½ 4	—	—	41,471	166,471	—	* Amount subscribed by the "Great Western" and "Much Wenlock and Severn Junction" Companies in equal proportions, for the construction of the Coalbrookdale Extension Branch. The "Great Western" pay the "Much Wenlock and Severn Junction" Company a fixed sum in lieu of dividend on the moiety subscribed by it, and retain the balance of the profits of the working of the extension in lieu of dividend on their moiety. † Capitalized value of Land Rentcharges.	
—	—	—	895,293	—	—	—	—	—	895,293	—		
75,063*	4	4½	142,859	—	—	40,000	4	40,000	182,859	—	* Amount of 5 per cent. Preference shares existing up to 30th June 1889. These shares were subsequently cancelled and new 4 per cent. preference shares to a like amount issued in substitution of the 5 per cent. shares.	
12,928	5	Nil	49,893	—	—	24,918	4½	24,918	74,811	—		
30,000	4½	Nil	66,497	—	—	23,600	4	23,600	90,097	—		
12,150	5	5	49,471	25,000	4	—	—	25,000	74,471	—		
69,650	5	Nil	299,650	—	—	76,600	5	76,600	376,250	—		
—	—	—	—	—	—	—	—	—	—	—		
—	—	—	7,747	—	—	—	—	—	7,747	—		
—	—	—	100,000	33,300	5	—	—	33,300	133,300	—		
66,000	5	Nil	186,000	—	—	62,000	5	62,000	248,000	—	The line is worked by the "Great Western" and "Midland" Companies. The traffic receipts and working expenses are included in the Returns of those Companies.	
Railway Companies; the Capital is included in the Returns of those Companies.												
—	—	—	214,252	—	—	—	—	—	214,252	—	Line in course of construction.	
—	—	—	334,000	—	—	—	—	—	334,000	—		

* Capitalized value of Land Rentcharges.

* Amount subscribed by the "Great Western" and "Much Wenlock and Severn Junction" Companies in equal proportions, for the construction of the Coalbrookdale Extension Branch. The "Great Western" pay the "Much Wenlock and Severn Junction" Company a fixed sum in lieu of dividend on the moiety subscribed by it, and retain the balance of the profits of the working of the extension in lieu of dividend on their moiety.

† Capitalized value of Land Rentcharges.

* Amount of 5 per cent. Preference shares existing up to 30th June 1889. These shares were subsequently cancelled and new 4 per cent. preference shares to a like amount issued in substitution of the 5 per cent. shares.

The line is worked by the "Great Western" and "Midland" Companies. The traffic receipts and working expenses are included in the Returns of those Companies.

Line in course of construction.

1st December 1889.—ENGLAND AND WALES—continued.

SHARE CAPITAL.			CAPITAL RAISED BY LOANS AND DEBENTURE STOCK.						TOTAL CAPITAL paid up and raised by Loans and Debenture Stock.	SUBSCRIPTIONS TO OTHER COMPANIES.	REMARKS.
Preferential.			Total Paid-up Stock and Share Capital.	Loans.		Debenture Stock.		Total raised by Loans and Debenture Stock.			
Amount.	Preferential Rate of Dividend.	Rate of Dividend paid.		Amount.	Rate of Interest.	Amount.	Rate of Interest.				
£	Per cent.	Per cent.	£	£	Per cent.	£	Per cent.	£	£	£	
—	—	—	22,550	—	—	—	—	—	22,550	—	Line in course of construction.
—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	
—	—	—	3,284,314	40,000*	5	3,547,016	3	3,587,016	6,871,330	—	* Capitalized value of Land Rentcharges.
67,210	5	5	216,782	6,056*	5	148,000	5	154,056	370,838	—	* Capitalized value of Land Rentcharges.
—	—	—	40,000	13,300	6	—	—	13,300	53,300	—	
193,055	5	Nil	273,515	7,964*	5	91,983 120,258 70,000	3 4 4½	290,205	563,720	—	* Capitalized value of Land Rentcharges.
42,000	5	5	135,548	—	—	47,300	5	47,300	182,848	—	The line was opened for traffic on the 20th July 1889. * Preferred Stock. On 9,540 <i>l.</i> of this Stock interest at the rate of 6 per cent. per annum was paid for six months. † Deferred Stock.
14,250	4	4	311,639	4,200	4	—	—	88,320	399,959	—	
135,000	4	2½		54,600	4½						
20,000	5	Nil		24,460	4½						
				5,060	5						
—	—	—	37,871	—	—	—	—	—	37,871	—	Line in course of construction.
570,256	3½	3½	34,001,782	223,095	3	50,000	½	12,034,094	46,035,876	—	* Minimum rate.
390,187	4	4		219,385	3½	50,000	3½				
130,000	4	4		80,300	3½	11,411,126	4				
520,000	4	4		238	4						
763,000	4	4									
100,000	4½*	4½									
794,040	6	6									
288,375	6*	6									
—	—	—	52,793	—	—	—	—	—	52,793	—	
—	—	—	—	—	—	—	—	—	—	—	
7,200	5	Nil	30,825	2,000 10,500 1,500	4 4½ 5	—	—	14,000	44,825	—	
—	—	—	25,300	6,750 6,600	4 4½	—	—	13,350	38,650	650	
—	—	—	93,400	—	—	—	—	—	93,400	—	
—	—	—	27,966	—	—	—	—	—	27,966	—	
—	—	—	59,616	—	—	41,015	5	41,015	100,631	—	
—	—	—	3,000	—	—	—	—	—	3,000	—	

NAME OF COMPANY.		AUTHORISED CAPITAL.			PAID-UP STOCK AND				
		By Shares and Stock.	By Loans and Debenture Stock.	Total.	Ordinary.		Guaranteed.		
					Amount.	Rate of Dividend paid.	Amount.	Guaranteed Rate of Dividend.	Rate of Dividend paid.
		£	£	£	£	Per cent.	£	Per cent.	Per cent.
<i>London and Blackwall</i> - - - -		<i>Leased to the Great Eastern.</i>							
<i>London and Greenwich</i> - - - -		<i>Leased to the South-Eastern.</i>							
<i>London and North-Western</i> - - -		80,223,233	29,854,398	110,077,631	38,047,673	7 $\frac{3}{8}$	15,100,406	4	4
Leased to or worked by the London and North-Western.	<i>Charnwood Forest</i> - - -	159,000	53,000	212,000	159,000	Nil	—	—	—
	<i>Harborne</i> - - - -	100,000	83,000	183,000	55,990	Nil	—	—	—
	<i>Mold and Denbigh Junction</i> - -	325,000	247,000	572,000	73,000 76,000* 76,000†	Nil Nil Nil	—	—	—
	<i>Shropshire Union Railways and Canal</i>	436,143	—*	436,143	436,143	3 $\frac{1}{16}$	—	—	—
	<i>See also "Birkenhead," "Ludlow and Cleve Hill," "Manchester, South Junction, and Altrincham," "North and South-Western Junction," "Oldham, Ashton-under-Lyne, and Guide Bridge Junction," "Shrewsbury and Hereford," "Tenbury," and "West London."</i>								
<i>London and South-Western</i> - - -		24,460,727	8,543,251	33,003,978	11,623,505	6	797,980	4	4
Leased to or worked by the London and South-Western.	<i>North Cornwall</i> - - -	660,000	220,000	880,000	149,980	1 $\frac{7}{8}$	—	—	—
	<i>Salisbury Railway and Market House.</i>	17,000	4,600	21,600	13,050	5	—	—	—
	<i>Sidmouth</i> - - - -	66,000	22,000	88,000	58,536	1 $\frac{1}{2}$	—	—	—
	<i>Stonehouse Pool Improvement and Railway.</i>	50,000	16,600	66,600	50,000	Nil	—	—	—
	<i>See also "West London Extension" and "Weymouth and Portland."</i>								
<i>London, Brighton, and South Coast</i> - -		18,667,600	6,184,692	24,852,292	2,602,555 2,448,710* 2,448,710†	7 $\frac{1}{2}$ 6 8 $\frac{1}{2}$	1,955,860	5	5
Leased to or worked by the London, Brighton, and South Coast.	<i>Brighton and Dyke</i>	72,000	24,000	96,000	22,310 24,800* 24,800†	Nil Nil Nil	—	—	—
	<i>Hayling Railways</i>	66,000	21,900	87,900	44,120	1 $\frac{1}{2}$	—	—	—
	<i>See also "Victoria Station and Pimlico" and "West London Extension."</i>								
<i>London, Chatham, and Dover</i> - - -		18,721,237	3,142,266	26,863,503	11,257,782	Nil	134,927	4 $\frac{1}{2}$	4 $\frac{1}{2}$
Leased to the London, Chatham, and Dover.	<i>Mid-Kent (Bromley to St. Mary's (ray).</i>	70,000	23,000	93,000	61,550	4	—	—	—
	<i>See also "Victoria Station and Pimlico"</i>								

1st December 1889.—ENGLAND AND WALES—continued.

SHARE CAPITAL.				CAPITAL RAISED BY LOANS AND DEBENTURE STOCK.					TOTAL CAPITAL paid up and raised by Loans and Debenture Stock.	SUBSCRIPTIONS TO OTHER COMPANIES.	REMARKS.
Preferential.			Total Paid-up Stock and Share Capital.	Loans.		Debenture Stock.		Total raised by Loans and Debenture Stock.			
Amount.	Preferential Rate of Dividend.	Rate of Dividend paid.		Amount.	Rate of Interest.	Amount.	Rate of Interest.				
£	Per cent.	Per cent.	£	£	Per cent.	£	Per cent.	£	£	£	
3,080,620	4	4	76,228,699	157,173*	5	27,369,225	4	27,526,398	103,755,097	4,717,332†	* Capitalized value of Rent-charges. † Including 1,689,455 <i>l.</i> converted debentures of other Companies.
—	—	—	159,000	—	—	46,000	5	46,000	205,000	—	In the Return of the Company it is stated that irregularities in the issue of debentures of this Company have been discovered and these irregularities are now the subject of litigation in the Chancery Division of the High Court of Justice. By an order of Mr. Justice Kay, a special referee was appointed to make inquiries into the over-issue and report to the Court, and this report shows that Stock to the amount of 117,902 <i>l.</i> 10 <i>s.</i> has been issued, but that 46,000 <i>l.</i> only has been legally issued, the balance being <i>ultra vires</i> . The books of the Company show that the full issue of 53,000 <i>l.</i> has been made.
—	—	—	55,990	17,262* 22,652*	4½ 5	20,466	5	60,380	116,370	—	* Capitalized value of Land Rentcharges.
100,000	5	Nil	325,000	12,215†	5	40,000 137,000 70,000	5 5 5	259,215	584,215	—	* Preferred Stock. † Deferred Stock. ‡ Capitalized value of Land Rentcharges.
—	—	—	436,143	—	—	—	—	—	436,143	—	* Borrowing powers transferred to the "London and North-Western" Company.
0,760,822	4	4	23,182,307	25,000 19,225*	3½ 4	242,974 1,124,083 6,703,946	3 3½ 4	8,115,228	31,297,535	675,820	* Capitalized value of Land Rentcharges.
—	—	—	149,980	—	—	50,000	4	50,000	199,980	—	
1,000	6	6	14,050	3,600	4	—	—	3,600	17,650	—	
—	—	—	58,536	—	—	22,000	5	22,000	80,536	—	
—	—	—	50,000	16,600	5	—	—	16,600	66,600	—	
8,363,275	5	5	17,819,110	—	—	1,306,239 4,575,922	4 4½	5,882,161	23,701,271	—	* Preferred Stock. † Deferred Stock.
—	—	—	71,910	—	—	24,000	4	24,000	95,910	—	* Preferred half shares. † Deferred half shares.
16,000	5	5	60,120	—	—	21,900	4½	21,900	82,020	—	
6,329,974 869,532	4½ 4½	3½ Nil	18,592,215	305,812 90,854	3½ 3½	1,221,352 6,483,248	4 4½	8,101,266	26,693,481	166,638	
—	—	—	61,550	8,000 15,000	4 4½	—	—	23,000	84,550	—	

NAME OF COMPANY.	AUTHORISED CAPITAL.			PAID-UP STOCK AND					
	By Shares and Stock.	By Loans and Debenture Stock.	Total.	Ordinary.		Guaranteed.			
				Amount.	Rate of Dividend paid.	Amount.	Guaran- teed Rate of Divi- dend.	Rate of Dividend paid.	
	£	£	£	£	Per cent.	£	Per cent.	Per cent.	
Londonderry (Seaham to Sunderland)	-	Private property.							
London, Tilbury, and Southend	-	2,342,000	795,000	3,137,000	1,332,530	4½	—	—	—
Longton, Adderley Green, and Bucknall	-	Worked by the North Staffordshire.							
Lostwithiel and Fowey	-	30,000	10,000	40,000	15,081	Nil	—	—	—
Louth and East Coast	-	Leased to the Great Northern.							
Ludlow and Clee Hill	-	30,000	12,000	42,000	30,000	Nil	—	—	—
Lydd	-	Worked by the South-Eastern.							
Lynton	-	133,000	41,000	174,000	—	—	—	—	—
Macclesfield Committee	-	Line owned by the "Manchester, Sheffield, and Lincolnshire" and "North Staffordshire"							
Maenclochog	-	Private property.							
Manchester and Milford	-	570,300	190,100	760,400	323,050	Nil	—	—	—
Manchester, Sheffield, and Lincolnshire	-	25,108,489	9,590,169	34,698,658	1,279,953 2,106,300* 2,106,300†	3⅝ 6 3	448,980 1,797,428 1,066,083 1,118,300 872,000	4 4½ 4½ 5 6	4 4½ 4½ 5 6
Wigan Junction See also the "Cheshire Lines Com- mittee," "Macclesfield Committee," "Manchester, South Junction, and Altrincham," "Oldham, Ashton- under-Lyne, and Guide Bridge Junc- tion," and "Sheffield and Midland Committee."	-	650,000	150,000	800,000	209,560	Nil	—	—	—
Manchester Ship Canal and Railway	-	8,000,000	2,000,000*	10,000,000	2,279,518 24,247	4† 5†	—	—	—
Manchester, South Junction, and Altrincham	-	—	216,666	216,666	—	—	—	—	—
Marlborough	-	Worked by the Great Western.							
Maryport and Carlisle	-	777,800	98,200	876,000	775,800	8½	2,000	4*	8½
Mawddwy	-	21,000	7,000	28,000	21,000	Nil	—	—	—
Mellis and Eye	-	Worked by the Great Eastern.							
Merrybent and Darlington	-	60,000	20,000	80,000	54,769	Nil	—	—	—

1st December 1889.—ENGLAND AND WALES—continued.

SHARE CAPITAL.			CAPITAL RAISED BY LOANS AND DEBENTURE STOCK.						TOTAL CAPITAL paid up and raised by Loans and Debenture Stock.	SUBSCRIPTIONS TO OTHER COMPANIES.	REMARKS.
Preferential.			Total Paid-up Stock and Share Capital.	Loans.		Debenture Stock.		Total raised by Loans and Debenture Stock.			
Amount.	Preferential Rate of Dividend.	Rate of Dividend paid.		Amount.	Rate of Interest.	Amount.	Rate of Interest.				
£	Per cent.	Per cent.	£	£	Per cent.	£	Per cent.	£	£	£	
400,000 200,880 9,470	4 4 4½	4 4 4½	1,942,880	—	—	678,728	4	678,728	2,621,608	—	
11,455	5	Nil	26,536	6,200 3,800	5 6	—	—	10,000	36,536	—	
—	—	—	30,000	10,000 2,000*	5 4½	—	—	12,000	42,000	—	The line is leased to the "London and North-Western" and "Great Western" Companies jointly. * Capitalized value of Land Rentscharges.
—	—	—	—	—	—	—	—	—	—	—	
Railway Companies ; the Capital is included in the Returns of those Companies.											
190,200	5	Nil	513,250	500 163,240 37,965*	4½ 5 5	—	—	201,705	714,955	—	* Capitalized value of Land Rentscharges.
366,698 515,186 968,000	3½ 4 5	3½ 4 5	19,645,228	44,800	4	79,577 7,250,456 300,000	4 4½ 5	7,674,833	27,320,061	6,575,542	* Preferred Stock. † Deferred Stock.
200,000 25,000	3½ 5	Nil Nil	434,560	141,720	4	—	—	141,720	576,280	—	
392,751	5	4†	4,696,516	1,355,850	4	—	—	1,355,850	6,052,366	—	* Interest will be paid to the shareholders out of capital during the construction of the works, as authorised by the Manchester Ship Canal Act, 1886, and the borrowing powers of the company will be reduced by one fourth of the amount so paid; the maximum reduction will be 188,000. † Rate of interest paid on capital during construction of works.
—	—	—	—	—	—	216,666	4	216,666	216,666	—	
—	—	—	777,800	1,200†	5	91,950	4	93,150	870,950	—	* Minimum rate. † Capitalized value of Land Rentscharges.
—	—	—	21,000	4,550	5	—	—	4,550	25,550	—	
—	—	—	54,769	3,500	4½	—	—	3,500	58,269	—	

[illegible]

31st December 1889.—ENGLAND AND WALES—continued.

SHARE CAPITAL.				CAPITAL RAISED BY LOANS AND DEBENTURE STOCK.						TOTAL CAPITAL paid up and raised by Loans and Debenture Stock.	SUBSCRIPTIONS TO OTHER COMPANIES.	REMARKS.
Preferential.			Total Paid-up Stock and Share Capital.	Loans.		Debenture Stock.		Total raised by Loans and Debenture Stock.				
Amount.	Preferential Rate of Dividend.	Rate of Dividend paid.		Amount.	Rate of Interest.	Amount.	Rate of Interest.					
£	Per cent.	Per cent.	£	£	Per cent.	£	Per cent.	£	£	£		
460,892	5	Nil	1,545,445	—	—	460,000 116,600	4½ 5	576,600	2,122,045	—		
“North-Eastern” Railway Companies; the Capital is included in the Returns of those Companies.												
3,160,113	4	4	8,441,943	*50,000 †33,420	4 5	455,680 2,293,311 52,745 358,263	3½ 4 4½ 4½	3,249,419	11,685,362	40,000	* Terminable debenture Stock. † Capitalized value of Rent-charges.	
—	—	—	2,640,915	—	—	—	—	—	2,640,915	—	‡ Under the provisions of the Metropolitan Railway Acts, 1885 and 1887, the surplus lands property of the Company was separated from the railway capital.	
1,500,000	5	Nil	5,244,444	13,750 92,000† 25,000	3½ 3½ 4	727,200 1,211,625	4 6	2,069,575	7,314,019	—	* This amount is in the hands of the Company. † Of this amount 25,000 <i>l.</i> was raised under Act of 1883 to pay off arrears of passenger duty. The sum is to be redeemed in 20 years from the date of the passing of the Act.	
—	—	—	350,000	—	—	—	—	—	350,000	—	Constituted a separate capital and undertaking under Act of 1875, and secured a dividend at the rate of 4 per cent. per annum by the “Midland” Railway Company under the Metropolitan District Railway Act of 1878.	
—	—	—	250,000	—	—	—	—	—	250,000	—	Constituted a separate capital and undertaking under Act of 1877.	
—	—	—	300,000	—	—	—	—	—	300,000	—	Constituted a separate capital and undertaking under Act of 1878.	
53,000	5	Nil	263,000	70,000	4½	—	—	70,000	333,000	—		
Capital is included in the Returns of those Companies.												
—	—	—	—	—	—	—	—	—	—	—		
24,230,679	4	4	64,489,324	34,812 38,927 184,553	3 3½ 3½	1,094,997 17,588,507	3 4	18,941,796	83,431,120	8,144,547*	* Consisting of 7,573,784 <i>l.</i> subscribed to lines the joint property of the “Midland” and other Companies, and 569,507 <i>l.</i> to other Companies.	
—	—	—	27,695	5,468	4	—	—	5,468	33,163	—		
—	—	—	442,500	—	—	75,600	4½	75,600	518,100	—		

* Terminable debenture Stock.
† Capitalized value of Rent-charges.

‡ Under the provisions of the Metropolitan Railway Acts, 1885 and 1887, the surplus lands property of the Company was separated from the railway capital.

* This amount is in the hands of the Company.
† Of this amount 25,000*l.* was raised under Act of 1883 to pay off arrears of passenger duty. The sum is to be redeemed in 20 years from the date of the passing of the Act.

Constituted a separate capital and undertaking under Act of 1875, and secured a dividend at the rate of 4 per cent. per annum by the “Midland” Railway Company under the Metropolitan District Railway Act of 1878.

Constituted a separate capital and undertaking under Act of 1877.

Constituted a separate capital and undertaking under Act of 1878.

* Consisting of 7,573,784*l.* subscribed to lines the joint property of the “Midland” and other Companies, and 569,507*l.* to other Companies.

NAME OF COMPANY.	AUTHORISED CAPITAL.			PAID-UP STOCK AND DEBENTURES.					
	By Shares and Stock.	By Loans and Debenture Stock.	Total.	Ordinary.		Guaranteed.			
				Amount.	Rate of Dividend paid.	Amount.	Guaranteed Rate of Dividend.	Rate of Dividend paid.	
	£	£	£	£	Per cent.	£	Per cent.	Per cent.	
Midland and North-Eastern Committee (Swinton to Knottingley.)	The Line is the joint property of the "Midland" and "North-Eastern" Railway Companies ;								
Midland and South-Western Junction	743,518	679,868	1,423,386	294,162	Nil	—	—	—	
Mid Wales	Worked by the Cambrian.								
Milford	Worked by the Great Western.								
Milford Haven Dock and Railway	140,000	46,000	186,000	74,230	Nil	—	—	—	
Minehead	Worked by the Great Western.								
Mold and Denbigh Junction	Worked by the London and North-Western.								
Much Wenlock and Severn Junction	Worked by the Great Western.								
Mumbles Railway and Pier	81,000	27,000	108,000	—	—	—	—	—	
Muswell Hill and Palace Railway	Worked by the Great Northern.								
Nantwich and Market Drayton	Worked by the Great Western.								
Neath and Brecon	379,030	1,294,870	1,673,900	256,230	Nil	—	—	—	
Newark and Ollerton	150,000	50,000	200,000	—	—	—	—	—	
Newent	Worked by the Great Western.								
Newport, Godshill, and St. Lawrence	84,000	28,000	112,000	—	—	—	—	—	
Northampton and Banbury Junction	915,000	300,000	1,215,000	109,960	Nil	—	—	—	
North and South-Western Junction	105,000	33,600*	138,600	128,600	7½	—	—	—	
North Cornwall	Worked by the London and South-Western.								
North-Eastern	47,037,585	15,507,346	62,544,931	24,070,886	7½	5,786,736 155,000 483,540 1,356,680	4 4½ 5 6	4 4½ 5 6	
Leased to the North-Eastern.	Great North of England, Clarence, and Hartlepool Junction	74,900	—*	74,900	41,875	3	16,918	4½	4½
	Scarborough and Whitby	400,000	133,333	533,333	33,791	Nil	—	—	—
Northern and Eastern	Leased to the Great Eastern.								
North London See also "North and South-Western Junction."	3,225,000	1,070,766	4,295,766	2,020,400	7½	—	—	—	
North Pembrokeshire and Fishguard	212,000	54,000	266,000	10,106	Nil	—	—	—	
North Staffordshire	6,001,000	1,992,833	7,993,833	3,200,000	4½	1,170,000	5	5	
Longton, Adderley Green, and Bucknall See also "Macclesfield Committee."	50,000	16,000	66,000	46,037	Nil	—	—	—	
North Wales (narrow gauge)	106,000	50,000	156,000	65,975	Nil	—	—	—	
Extensions	28,000	9,300	37,300	—	—	—	—	—	
Nottingham and Grantham Railway and Canal	Leased to the Great Northern.								
Nottingham Suburban	Worked by the Great Northern.								
Ogmore Dock and Railway	570,000	190,000	760,000	—	—	—	—	—	
Oldbury	Worked by the Great Western.								

st December 1889.—ENGLAND AND WALES—continued.

PAID-UP CAPITAL.				CAPITAL RAISED BY LOANS AND DEBENTURE STOCK.						TOTAL CAPITAL paid up and raised by Loans and Debenture Stock.	SUBSCRIPTIONS TO OTHER COMPANIES.	REMARKS.
Preferential.			Total Paid-up Stock and Share Capital.	Loans.		Debenture Stock.		Total raised by Loans and Debenture Stock.				
Amount.	Preferential Rate of Dividend	Rate of Dividend paid.		Amount.	Rate of Interest.	Amount.	Rate of Interest.					
£	Per cent.	Per cent.	£	£	Per cent.	£	Per cent.	£	£	£		
The Capital is included in the Returns of those Companies.												
337,464	5	Nil	631,626	—	—	154,356 502,580	4 5	656,936	1,288,562	—		
—	—	—	74,230	—	—	45,481	5	45,481	119,711	—		
—	—	—	—	—	—	—	—	—	—	—		
122,800	1½	Nil	379,030	—	—	104,405 730,520 381,258	1½ 3 4	1,216,183	1,595,213	—		
—	—	—	—	—	—	—	—	—	—	—		
—	—	—	—	—	—	—	—	—	—	—		
145,000	5	Nil	329,730	4,070	5	115,930	5	290,058	619,788	—		
74,770	5	Nil	—	—	—	170,058	5	—	—	—		
—	—	—	128,600	—	—	—	—	—	128,600	—	Line leased to the "London and North-Western," "Midland," and "North London" Companies.	
85,000	3½	3½	44,573,882	64,815	4	12,561,300	4	13,795,709	58,369,591	228,450	* Under the Companies Clauses Consolidation Act, 1845, the Company created share capital in lieu of loan capital.	
130,000	3½	3½	—	31,475	4½	1,138,119	4½	—	—	—		
971,090	4	4	—	—	—	—	—	—	—	—		
535,000	5½	5½	—	—	—	—	—	—	—	—		
13,725	5	5	72,518	—	—	—	—	—	72,518	—	* Borrowing powers exercised by the "North-Eastern" Railway Company.	
53,718	3	Nil	314,725	—	—	106,666	5	106,666	421,391	—		
144,946	5	Nil	—	—	—	—	—	—	—	—		
82,270	5	Nil	—	—	—	—	—	—	—	—		
250,000	4½	4½	2,970,400	—	—	6,500	4	970,866	3,941,266	—	* Minimum rate, 4½; Maximum, 5.	
700,000	—	5	—	—	—	964,366	4½	—	—	—		
—	—	—	10,106	—	—	—	—	—	10,106	—		
639,901	4½	4½	5,980,901	—	—	1,881,691	4½	1,906,251	7,887,152	216,029		
971,000	5	5	—	—	—	24,560	4½	—	—	—		
—	—	—	46,037	1,000 15,000	5½ 6	—	—	16,000	62,037	—		
17,390	6	Nil	83,365	4,400 1,600	4 4½	30,000 3,563	4 5	39,563	122,928	—		
—	—	—	—	—	—	—	—	—	—	—		
—	—	—	—	—	—	—	—	—	—	—		

NAME OF COMPANY.	AUTHORISED CAPITAL.			PAID-UP STOCK.				
	By Shares and Stock.	By Loans and Debenture Stock.	Total.	Ordinary.		Guaranteed.		
				Amount.	Rate of Dividend paid.	Amount.	Guaranteed Rate of Dividend.	Rate of Dividend paid.
Oldham, Ashton-under-Lyne, and Guide Bridge Junction	£ 340,000	£ —*	£ 340,000	£ 271,300	Per cent. Nil	£ 40,000	Per cent. 4½	Per cent. 4½
Oxford and Aylesbury Tramroad - - -	85,000	—	85,000	—	—	—	—	—
Painswick - - - - -	33,000	11,000	44,000	—	—	—	—	—
Pembroke and Tenby - - - -	421,000	131,200	552,200	79,876	Nil	23,335	4	4
Penarth Extension - - - -	Leased to the Taff Vale.							
Penarth Harbour, Dock, and Railway -	Leased to the Taff Vale.							
Pewsey and Salisbury - - - -	350,000	116,000	466,000	—	—	—	—	—
Plymouth and Dartmoor - - - -	411,000	125,300	536,300	35,000	Nil	—	—	—
Plymouth, Devonport, and South-Western Junction.	855,000	284,000	1,139,000	262,194	Nil	—	—	—
Pontypridd, Caerphilly, and Newport -	240,000	80,000	320,000	105,000	Nil	—	—	—
Porthdinlleyn - - - - -	120,000	40,000	160,000	—	—	—	—	—
Portmadoc, Croesor, and Beddgelert -	48,000	15,980	63,980	20,000	Nil	—	—	—
Portsmouth and Hayling - - - -	75,000	24,750	99,750	—	—	—	—	—
Potteries, Shrewsbury, and North Wales -	908,200	556,390*	1,464,590	318,250 219,975† 219,975†	Nil Nil Nil	—	—	—
Princetown - - - - -	Worked by the Great Western.							
Ramsey and Somersham Junction - - -	Worked by the Great Eastern.							
Ravenglass and Eskdale - - - -	36,000	12,000	48,000	24,000	Nil	—	—	—
Redruth and Chasewater - - - -	49,500	9,000	58,500	49,500	Nil	—	—	—
Regent's Canal, City, and Docks - - -	8,760,000	2,700,000	11,460,000	1,275,000*	2½	—	—	—
Rhondda and Swansea Bay - - - -	450,000	150,000	600,000	332,879	1½	—	—	—
Rhondda Valley and Hirwain Junction -	Amalgamated with the Taff Vale under Act 52 & 53 Vict. c. 193.							
Rhymer - - - - -	1,824,918	523,300	2,348,218	*480,538	8	—	—	—
Ross and Ledbury - - - - -	Worked by the Great Western.							
Ross and Monmouth - - - - -	Worked by the Great Western.							
Rowrah and Kelton Fell Mineral - - -	39,000	13,000	52,000	36,230	4	—	—	—
Royston and Hitchin - - - - -	Leased to the Great Northern.							

1st December 1889.—ENGLAND AND WALES—continued.

SHARE CAPITAL.			CAPITAL RAISED BY LOANS AND DEBENTURE STOCK.						TOTAL CAPITAL paid up and raised by Loans and Debenture Stock.	SUBSCRIPTIONS TO OTHER COMPANIES.	REMARKS.
Preferential.			Total Paid-up Stock and Share Capital.	Loans.		Debenture Stock.		Total raised by Loans and Debenture Stock.			
Amount.	Preferential Rate of Dividend.	Rate of Dividend paid.		Amount.	Rate of Interest.	Amount.	Rate of Interest.				
£	Per cent.	Per cent.	£	£	Per cent.	£	Per cent.	£	£	£	
—	—	—	311,300	—	—	—	—	—	311,300	—	* The line is vested jointly in the "London and North-Western and "Manchester, Sheffield and Lincolnshire" Railway Companies, and the ordinary capital is subscribed by them. The borrowing powers have been transferred to and are exercised by the Companies jointly.
—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	
236,404	5	2½	339,615	8,527*	5	61,790 28,350 19,900	4 4½ 5	118,567	458,182	—	* Capitalized value of Land Rentcharges.
—	—	—	—	—	—	—	—	—	—	—	
75,000	5	¾	161,010	2,894	4	—	—	9,694	170,704	—	
25,000	5	¾	—	6,400	4½	—	—	—	—	—	
26,010	5	Nil	—	400	5	—	—	—	—	—	
300,000	4½	Nil	562,194	—	—	94,700	4	94,700	656,894	—	Line under construction.
23,000	5	Nil	128,000	35,000	5	—	—	35,000	163,000	—	
—	—	—	—	—	—	—	—	—	—	—	
—	—	—	20,000	330 8,000	5 5½	—	—	8,330	28,330	—	
—	—	—	—	—	—	—	—	—	—	—	
100,000	5	Nil	858,200	4,737§	5	529,527	5	534,264	1,392,464	—	* And an amount equal to certain debts of, and money claims against, the Company, which amount has not yet been ascertained. † Preferred Stock. ‡ Deferred Stock. § Capitalized value of Land Rentcharges.
—	—	—	24,000	—	—	2,600 5,400	6 8	8,000	32,000	—	
—	—	—	49,500	7,500	5	—	—	7,500	57,000	—	
—	—	—	1,275,000*	—	—	91,352* 200,000*	4 4½	291,352*	1,566,352*	—	* Capital raised for the purpose of the canal only; none has yet been raised for the railway. The ordinary stock is entitled to accumulative dividends at the rate of 4 per cent. per annum to 31st March 1888, and 4½ per cent. per annum in perpetuity after that date. * Capitalized value of Land Rentcharges.
75,982	5	5	408,861	25,000*	5	—	—	25,000	433,861	—	
967,440* 13,540†	4 6	4 8	1,461,518	3,100 23,220	3½ 3½	300,070	4	326,390	1,787,908	—	* Nominal additions were made to the ordinary capital of 7,938½, and to the preferential capital of 244,980½, on the consolidation and conversion of stocks under the Rhymney Railway (Capital) Act, 1889. † This stock participates with the ordinary stock in any dividend above 6 per cent.
—	—	—	36,230	—	—	10,000	4	10,000	46,230	—	

NAME OF COMPANY.	AUTHORISED CAPITAL.			PAID-UP STOCK AND				
	By Shares and Stock.	By Loans and Debenture Stock.	Total.	Ordinary.		Guaranteed.		
				Amount.	Rate of Dividend paid.	Amount.	Guaran- teed Rate of Divi- dend.	Rate of Dividend paid.
	£	£	£	£	Per cent.	£	Per cent.	Per cent.
St. Austell and Pentewan Railway, Harbour and Dock.	Private Property.							
St. Austell Valleys Railway and Dock -	80,000	—	80,000	1,131	Nil	—	—	—
St. Helen's and Wigan Junction - -	Name changed to "Liverpool, St. Helen's, and South Lancashire" under Act 52 & 53							
Salisbury Railway and Market House -	Worked by the London and South-Western.							
Saundersfoot Railway and Harbour - -	Private Property.							
Scarborough and Whitby - - -	Worked by the North-Eastern.							
Scarborough, Bridlington, and West Riding Junction.	450,000	150,000	600,000	201,488	Nil	—	—	—
Seacombe, Hoylake, and Deeside - -	418,000	139,230	557,230	92,400	Nil	—	—	—
Wirral - - - - -	725,000	241,600	966,600	118,700	Nil	—	—	—
Severn and Wye and Severn Bridge - -	623,163	343,000	966,163	167,348	Nil	—	—	—
Shanklin and Chale - - - -	Name changed to Newport, Godshill, and St. Lawrence under Act 52 & 53 Vict. c. 151.							
Sheffield and Midland Committee - -	Line owned by the "Manchester, Sheffield, and Lincolnshire" and "Midland" Railway							
Shortlands and Nunhead - - -	320,000	106,000	426,000	—	—	—	—	—
Shrewsbury and Hereford - - -	675,000	—	675,000	—	—	50,000	4½	4½
"Great Western" and "London and North- Western" Companies in respect of the.						625,000	6	6
Shropshire :								
Shrewsbury (separate Undertaking) -	350,000	100,000	450,000	—	—	—	—	—
Market Drayton (separate Undertaking)	300,000	100,000	400,000	—	—	—	—	—
Shropshire Union Railways and Canal -	Leased to the London and North-Western.							
Sidmouth - - - - -	Worked by the London and South-Western.							
Snailbeach District - - - -	20,000	6,600	26,600	20,000	Nil	—	—	—
Somerset and Dorset - - - -	1,867,000	1,289,513	3,156,513	652,294 360,000	Nil 3½	—	—	—
South-Eastern - - - - -	20,591,580	6,928,375*	27,519,955	338,250 10 3,063,000 3,189,980† 3,189,980‡ 59§	3½ 4 4¾ 6 3¾ —	984,300 800,000	4½ 5½	4½ 5½
Lensed to or worked by the South-Eastern.	Elham Valley (Light)	165,000	55,000	220,000	—	—	—	—
	London and Greenwich	1,084,260	233,333	1,317,598	861,540	2¾	—	—
	Lydd - - -	491,000	163,333	654,333	75,000	4½	—	—
South Hampshire Railway and Pier - -	322,000	104,000	426,000	—	—	—	—	—
Southport and Cheshire Lines Extension -	Worked by the Cheshire Lines Committee.							
South Wales Mineral - - - -	167,210	83,000	250,210	55,610	Nil	—	—	—
Southwold - - - - -	49,000	28,000	77,000	39,910	Nil	—	—	—
Spilsby and Firsby - - - -	Worked by the Great Northern.							
Staines and West Drayton - - -	Worked by the Great Western.							
Stamford and Essendine - - -	Worked by the Great Northern.							
Stocksbridge - - - - -	69,000	23,000	92,000	33,000	Nil	—	—	—
Stonehouse Pool Improvement and Railway -	Worked by the London and South-Western.							

At December 1889.—ENGLAND AND WALES—continued.

SHARE CAPITAL.				CAPITAL RAISED BY LOANS AND DEBENTURE STOCK.					TOTAL CAPITAL paid up and raised by Loans and Debenture Stock.	SUBSCRIPTIONS TO OTHER COMPANIES.	REMARKS.
Preferential.			Total Paid-up Stock and Share Capital.	Loans.		Debenture Stock.		Total raised by Loans and Debenture Stock.			
Amount.	Preferential Rate of Dividend.	Rate of Dividend paid.		Amount.	Rate of Interest.	Amount.	Rate of Interest.				
£	Per cent.	Per cent.	£	£	Per cent.	£	Per cent.	£	£	£	
—	—	—	1,131	—	—	—	—	—	1,131	—	
ct. c. 91.											
—	—	—	201,488	—	—	72,000	4½	72,000	273,488	—	
123,310	4½	4½	215,710	51,330	4	—	—	51,330	267,040	—	
—	—	—	118,700	—	—	55,000	4	55,000	173,700	—	
50,000	4	1	623,084	—	—	246,191	4	321,191	944,275	—	In addition to paying interest on loans, &c. the Company paid 1,263 <i>l.</i> for Land Rent-charges. * Interest on this amount guaranteed by the "Midland" Railway and the Sharpness Docks Companies.
107,467	4	Nil				75,000*	4				
298,269	4	Nil									
Companies; the Capital is included in the Returns of those Companies.											
—	—	—	—	—	—	—	—	—	—	—	
—	—	—	675,000	—	—	—	—	—	675,000	—	
—	—	—	—	—	—	—	—	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	
—	—	—	20,000	2,220	4½	—	—	2,220	22,220	—	
35,655	4½	Nil	1,223,829	—	—	1,232,380	5	1,232,380	2,456,209	12,000	The Company pays an annual sum of 374 <i>l.</i> by way of Rent-charge, in respect of land purchased.
175,880	5	Nil									
699,000	4	4	17,075,884	2,000	3	1,199,515	4	5,644,755	22,720,639	341,373	* Subject to a reduction of 250,000 <i>l.</i> on account of Rentcharge granted by the Company. † Preferred Stock. ‡ Deferred Stock. § Stock in arrear of calls.
170,680	4½	4½		50,000	3½	1,500	4½				
190	4½	—		49,300	3½	4,342,440	5				
640,370	5	5									
25	5	—									
40	5	—									
—	—	—	—	—	—	—	—	—	—	—	Under powers of South-Eastern Railway Company's Act, 1888, sect. 22. the Company received 220,000 <i>l.</i> South-Eastern 4 per cent. vested Companies Stock in substitution for the annual rent receivable and therefore the exercise of the Capital powers is unnecessary.
222,720	5	5	1,084,260	64,000	4	131,260	4	224,860	1,309,120	—	
—	—	—	75,000	—	—	25,000	4½	25,000	100,000	—	
—	—	—	—	—	—	—	—	—	—	—	
105,165	6	Nil	160,775	46,700	5	—	—	49,000	209,775	—	As at 30th September 1889. * Capitalized value of Land Rentcharges.
				1,300	6						
				1,000*	5						
9,000	5	Nil	48,910	700	4	11,900	4	27,536	76,446	—	
				14,936	5						
36,000	5	5	69,000	4,000	4	—	—	15,000	84,000	—	
				11,000	5						

NAME OF COMPANY.	AUTHORISED CAPITAL.			PAID-UP STOCK AND				
	By Shares and Stock.	By Loans and Debenture Stock.	Total.	Ordinary.		Guaranteed.		
				Amount.	Rate of Dividend paid.	Amount.	Guaranteed Rate of Dividend.	Rate of Dividend paid.
Stratford-upon-Avon, Towcester, and Midland Junction.	£ 193,450	£ 200,000	£ 393,450	£ 160,000	Per cent. Nil	£ —	Per cent. —	Per cent. —
Sutton and Willoughby - - - -	Worked by the Great Northern.							
Sutton Bridge Railway and Dock - -	270,000	89,966	359,966	114,840	Nil	—	—	—
Swansea and Mumbles - - - -	95,000	20,000	115,000	17,230	$\frac{1}{8}$	—	—	—
Taff Vale - - - - -	6,437,027	966,709	7,403,736	4,194,833 179,534	5 12 $\frac{1}{2}$	—	—	—
Leased to or worked by the Taff Vale.	Aberdare - - - -	50,000	16,600	66,600	—	—	50,000	10
	Penarth Extension - - - -	15,000	5,000	20,000	15,000	Nil	—	—
	Penarth Harbour, Dock, and Railway.	772,000	257,000	1,029,000	772,000	5 $\frac{1}{4}$	—	—
Talyllyn - - - - -	15,000	5,000	20,000	15,000	Nil	—	—	—
Teign Valley - - - - -	Worked by the Great Western.							
Tenbury Railway - - - - - "Great Western" and "London and North-Western" Companies in respect of the.	30,000	—	30,000	—	—	30,000	4 $\frac{1}{2}$	4 $\frac{1}{2}$
Terrington and Walpole Tramroads - -	See note, page iii.							
Thetford and Watton - - - - -	Worked by the Great Eastern.							
Tiverton and North Devon - - - -	Worked by the Great Western.							
Tottenham and Hampstead Junction - -	510,000	—*	510,000	273,170	4 $\frac{1}{2}$	—	—	—
Towcester and Buckingham - - - -	180,000	60,000	240,000	—	—	—	—	—
Treferig Valley - - - - -	Amalgamated with the Taff Vale under Act 52 & 53 Vict. c. 193.							
Vale of Glamorgan - - - - -	360,000	120,000	480,000	—	—	—	—	—
Vale of Llangollen - - - - -	Worked by the Great Western.							
Van - - - - -	20,000	6,666	26,666	20,000	Nil	—	—	—
Victoria Station and Pimlico - - - -	412,500	137,500	550,000	225,000	9	—	—	—
Wainfleet and Firaby - - - - -	Worked by the Great Northern.							
Watton and Swaffham - - - - -	Worked by the Great Eastern.							
Wellingborough and District Tramroads -	50,000	12,500	62,500	—	—	—	—	—

31st December 1889.—ENGLAND AND WALES—continued.

SHARE CAPITAL.				CAPITAL RAISED BY LOANS AND DEBENTURE STOCK.						TOTAL CAPITAL paid up and raised by Loans and Debenture Stock.	SUBSCRIPTIONS TO OTHER COMPANIES.	REMARKS.
Preferential.			Total Paid-up Stock and Share Capital.	Loans.		Debenture Stock.		Total raised by Loans and Debenture Stock.				
Amount.	Preferential Rate of Dividend.	Rate of Dividend paid.		Amount.	Rate of Interest.	Amount.	Rate of Interest.					
£ 15,350	Per cent. 5	Per cent. Nil	£ 175,350	£ —	Per cent. —	£ 177,265	Per cent. 5	£ 177,265	£ 352,615	£ —	Line not yet open for traffic.	
17,200	6	Nil	132,040	35,000 2,700	4½ 5	—	—	37,700	169,740	—	Line not open for traffic.	
7,770 30,280	4 6	2 6	55,280	20,000	5	—	—	20,000	75,280	—	This line is worked as part of the Swansea Improvements and Tramway Company's system of tramways. For further particulars see "Tramway Return."	
1,703,083 165,000	4 5	4 12½	6,242,450	6,570	3½	138,681 166,000 482,300	3 3½ 4	793,551	7,036,001	—	The capital of the Company was nominally increased by 2,826,952 <i>l.</i> on the conversion and consolidation of stock.	
—	—	—	50,000	10,250	3½	—	—	10,250	60,250	—	In addition to paying interest on capital, the Company paid 8,899 <i>l.</i> for Royalties.	
—	—	—	15,000	—	—	5,000	4	5,000	20,000	—		
—	—	—	772,000	—	—	77,510 179,490	3½ 4	257,000	1,029,000	—		
—	—	—	15,000	—	—	—	—	—	15,000	—		
—	—	—	30,000	—	—	—	—	—	30,000	—		
15,000 100,000 36,830	4 5 5	4 5 5	425,000	—	—	—	—	—	425,000	—	Line worked by the "Great Eastern" and "Midland" Companies.	
—	—	—	—	—	—	—	—	—	—	—	* The borrowing powers are vested in the "Midland" Company.	
—	—	—	—	—	—	—	—	—	—	—		
—	—	—	20,000	1,666*	3½	3,000	6	4,666	24,666	—	* Capitalized value of Land Rentcharges.	
130,000	4½	4½	355,000	—	—	132,322	4½	132,322	487,322	—		
—	—	—	—	—	—	—	—	—	—	—		

NAME OF COMPANY.	AUTHORISED CAPITAL.			PAID-UP STOCK AND DEBENTURES.					
	By Shares and Stock.	By Loans and Debenture Stock.	Total.	Ordinary.		Guaranteed.			Rate of Dividend paid.
				Amount.	Rate of Dividend paid.	Amount.	Guaranteed Rate of Dividend.	Rate of Dividend paid.	
	£	£	£	£	Per cent.	£	Per cent.	Per cent.	
<i>Wellington and Severn Junction</i> - - -	<i>Leased to the Great Western.</i>								
<i>Welshpool and Llanfair</i> - - -	39,000	13,000	52,000	199	Nil	—	—	—	
<i>Wenlock</i> - - - - -	<i>Worked by the Great Western.</i>								
<i>West Cornwall Railway</i> - - -	<i>See under Great Western.</i>								
<i>West Lancashire</i> - - - - -	777,500	709,126	1,486,626	153,768	Nil	—	—	—	
Liverpool, Southport, and Preston Junction.	200,000	66,600	266,600	78,014	Nil	—	—	—	
<i>West London</i> - - - - -	180,380	—	180,380	—	—	101,180 15,200 64,000	2 6 3½	2 6 3½	
<i>West London Extension</i> - - - -	555,000*	185,000	740,000	555,000†	Nil	—	—	—	
<i>West Riding and Grimsby Joint Committee</i> -	Line owned by the "Great Northern" and "Manchester, Sheffield, and Lincolnshire								
<i>West Somerset</i> - - - - -	<i>Leased to the Great Western.</i>								
<i>West Somerset Mineral</i> - - - -	75,000	30,000	105,000	42,500	5	—	—	—	
<i>Weymouth and Portland</i> - - - -	75,000	25,000	100,000	75,000	4 ^p / ₂₀	—	—	—	
<i>Whitby, Redcar, and Middlesbrough Union</i> -	Line sold to the North-Eastern under Act 52 & 53 Vict. c. 60.								
<i>Whitland and Cardigan</i> - - - -	<i>Worked by the Great Western.</i>								
<i>Whitland, Cronware, and Pendine</i> - - -	24,000	8,000	32,000	—	—	—	—	—	
<i>Wigan Junction</i> - - - - -	<i>Worked by the Manchester, Sheffield, and Lincolnshire.</i>								
<i>Wirral</i> - - - - -	<i>Worked by the Seacombe, Hoylake, and Deeside.</i>								
<i>Witney</i> - - - - -	<i>Worked by the Great Western.</i>								
<i>Wivenhoe and Brightlingsea</i> - - - -	<i>Worked by the Great Eastern.</i>								
<i>Woodside and South Croydon Joint Committee.</i>	Line owned by the "London, Brighton, and South Coast" and "South-Eastern" Railways.								
<i>Woodstock</i> - - - - -	30,000	10,000	40,000	16,000	Nil	—	—	—	
<i>Worcester and Broom</i> - - - - -	180,000	60,000	240,000	2,000	Nil	—	—	—	
<i>Wrexham and Ellesmere</i> - - - - -	180,000	60,000	240,000	—	—	—	—	—	
<i>Wrexham, Mold, and Connah's Quay</i> -	732,750	600,090	1,332,840	445,464	Nil	—	—	—	
Buckley - - - - -	89,200	10,000	99,200	45,472	5	—	—	—	
<i>Wye Valley</i> - - - - -	<i>Worked by the Great Western.</i>								
TOTAL ENGLAND AND WALES -	598,580,690	217,290,452	815,871,142	268,225,357	—	82,303,110	—	—	

31st December 1889.—ENGLAND AND WALES—continued.

PAID-UP CAPITAL.				CAPITAL RAISED BY LOANS AND DEBENTURE STOCK.					TOTAL CAPITAL paid up and raised by Loans and Debenture Stock.	SUBSCRIPTIONS TO OTHER COMPANIES.	REMARKS.
Preferential.			Total Paid-up Stock and Share Capital.	Loans.		Debenture Stock.		Total raised by Loans and Debenture Stock.			
Amount.	Preferential Rate of Dividend.	Rate of Dividend paid.		Amount.	Rate of Interest.	Amount.	Rate of Interest.				
£	Per cent.	Per cent.	£	£	Per cent.	£	Per cent.	£	£	£	
—	—	—	199	—	—	—	—	—	199	—	
532,416	5	Nil	686,184	—	—	654,406	5	654,406	1,340,590	—	
—	—	—	78,014	—	—	—	—	—	78,014	—	
—	—	—	180,380	—	—	—	—	—	180,380	—	
—	—	—	555,000	22,800	4	—	—	22,800	577,800	—	* Amount authorised to be subscribed by the owning Companies. † Amount subscribed by the owning Companies.
Railway Companies; the Capital is included in the Returns of those Companies.											
32,500	6	6	75,000	13,700	5	16,300	5	30,000	105,000	10,000	
—	—	—	75,000	—	—	14,250 10,750	4 4½	25,000	100,000	—	
—	—	—	—	—	—	—	—	—	—	—	
Companies; the Capital is included in the Returns of those Companies.											
—	—	—	16,000	—	—	10,000	4½	10,000	26,000	—	
—	—	—	2,000	—	—	—	—	—	2,000	—	
—	—	—	—	—	—	—	—	—	—	—	
111,365	4	4	556,829	436*	5	423,094	4	423,530	980,359	—	* Capitalized value of Land Rentcharges.
19,800	5	5	65,272	—	—	—	—	—	65,272	—	Ordinary shares to the amount of 600 <i>l.</i> , preference stock to the amount of 200 <i>l.</i> , and debentures to the amount of 20,000 <i>l.</i> , have been exchanged for debenture stock of the Wrexham, Mold, and Connah's Quay Railway Company under that Company's Act of 1883.
3,952,776	—	—	534,481,243	6,967,466	—	182,125,089	—	189,092,555	723,573,798	28,757,734	TOTAL ENGLAND AND WALES.

No. 1.—AMOUNT of CAPITAL, &c., upon the

NAME OF COMPANY.	AUTHORIZED CAPITAL.			PAID-UP STOCK AND DEBENTURES.				
	By Shares and Stock.	By Loans and Debenture Stock.	Total.	Ordinary.		Guaranteed.		
				Amount.	Rate of Dividend paid.	Amount.	Guaranteed Rate of Dividend.	Rate of Dividend paid.
<i>Anstruther and St. Andrews</i> - - -	£	£	£	£	Per cent.	£	Per cent.	Per cent.
	<i>Worked by the North British.</i>			—				
<i>Arbroath and Forfar</i> - - -	<i>Leased to the Caledonian.</i>							
<i>Ayr and Maybole</i> - - -	<i>Leased to the Glasgow and South-Western.</i>							
<i>Ayrshire and Wigtownshire</i> - - -	200,000	66,600	266,600	200,000	$\frac{7}{8}$	—	—	—
<i>Blane Valley</i> - - -	<i>Worked by the North British.</i>							
<i>Caledonian</i> - - -	34,874,110	9,250,411	44,124,521	10,860,327 2,508,027* 276,666†	$5\frac{1}{2}$ Nil Nil	8,549,654†	4	4
Leased to or worked by the Caledonian.	<i>Arbroath and Forfar</i> - - -	250,000	16,666	266,666	189,950	$5\frac{1}{2}$	40,000	5
	<i>Callander and Oban</i> - - -	583,900	194,600	778,500	276,710	Nil	—	—
	<i>Cathcart District</i> - - -	284,000	94,330	378,330	172,040	Nil	—	—
	<i>Dundee and Newtyle</i> - - -	140,000	30,000	170,000	111,650	$1\frac{1}{2}$	—	—
	<i>Greenock and Wemyss Bay</i> - - -	150,000	50,000	200,000	85,000 35,000	$2\frac{1}{2}$ $5\frac{2}{3}$	—	—
	<i>Killin</i> - - -	27,000	9,000	36,000	20,785	Nil	—	—
	<i>Kilsyth and Bonnybridge</i> - - -	136,000	45,300	181,300	131,050	Nil	—	—
	<i>Lanarkshire and Ayrshire</i> - - -	325,000	175,000	500,000	281,200	Nil	—	—
	<i>Solway Junction</i> - - -	398,000	146,000	544,000	239,186	Nil	—	—
<i>Callander and Oban</i> - - -	<i>Worked by the Caledonian.</i>							
<i>Cathcart District</i> - - -	<i>Worked by the Caledonian.</i>							
<i>City of Glasgow Union</i> - - -	1,200,000	216,600	1,416,600	600,000	$3\frac{1}{2}$	550,000	8	8
<i>Clyde, Ardrishal, and Crinan</i> - - -	180,000	60,000	240,000	850	Nil	—	—	—
<i>Dundee and Newtyle</i> - - -	<i>Leased to the Caledonian.</i>							
<i>Edinburgh and Bathgate</i> - - -	<i>Leased to the North British.</i>							
<i>Eyemouth</i> - - -	30,000	10,000	40,000	9,048	Nil	—	—	—

31st December 1889.—SCOTLAND.

SHARE CAPITAL.				CAPITAL RAISED BY LOANS AND DEBENTURE STOCK.						TOTAL CAPITAL paid up and raised by Loans and Debenture Stock.	SUBSCRIPTIONS TO OTHER COMPANIES.	REMARKS.
Preferential.			Total Paid-up Stock and Share Capital.	Loans.		Debenture Stock.		Total raised by Loans and Debenture Stock.				
Amount.	Preferential Rate of Dividend.	Rate of Dividend paid.		Amount.	Rate of Interest.	Amount.	Rate of Interest.					
£	Per cent.	Per cent.	£	£	Per cent.	£	Per cent.	£	£	£		
—	—	—	200,000	—	—	—	—	—	200,000	—	As at 31st January 1890.	
8,730,546 1,639,890	4 5	4 5	32,565,110	280,730 527 4,400 40	3½ 3½ 3½ 4	7,467,647	4	7,753,344	40,318,454	690,377	As at 31st January 1890. * Deferred ordinary stock No. 1. † Deferred ordinary stock No. 2. ‡ This amount includes two sums, viz., 590,875 <i>l.</i> and 283,925 <i>l.</i> , a moiety of the dividends on which are repaid by the "North British" and "Glasgow and South-Western" Companies respectively to the "Caledonian" Company.	
—	—	—	229,950	—	—	—	—	—	229,950	—		
305,000	4½	3½	581,710	159,127 12,294	3½ 3½	4,780	4	176,201	757,911	—	As at 31st January 1890.	
—	—	—	172,040	—	—	58,330	4	58,330	230,370	—		
—	—	—	111,650	—	—	—	—	—	111,650	—	As at 30th April 1890.	
30,000	5	5	150,000	12,282	4	10,170	4	22,452	172,452	—	As at 31st January 1890.	
4,000	4	4	24,785	6,000	3½	—	—	6,000	30,785	—	As at 31st January 1890.	
—	—	—	131,050	—	—	48,300	4	48,300	174,350	—	As at 31st January 1890.	
—	—	—	281,200	75,000	4½	100,000	4	175,000	456,200	—	As at 31st January 1890.	
60,000	4	Nil	299,186	—	—	138,183	3½	138,183	437,369	—		
—	—	—	1,150,000	14,100 22,137 20,780	3½ 3½ 3½	76,685	4	133,702	1,283,702	—	As at 31st January 1890.	
—	—	—	850	—	—	—	—	—	850	—		
—	—	—	9,048	—	—	—	—	—	9,048	—		

NAME OF COMPANY.	AUTHORISED CAPITAL.			PAID-UP STOCK AND					
	By Shares and Stock.	By Loans and Debenture Stock.	Total.	Ordinary.		Guaranteed.			
				Amount.	Rate of Dividend paid.	Amount.	Guaran- teed Rate of Divi- dend.	Rate of Divi- dend paid.	
Findhorn - - - - -	£ 9,000	£ 3,000	£ 12,000	£ 8,962	Per cent. Nil	£ —	Per cent. —	Per cent. —	
Forth and Clyde Junction - - - - -	Leased to the North British.								
Forth Bridge - - - - -	2,125,000	708,333	2,833,333	2,125,000	4	—	—	—	
Glasgow and South-Western - - - - -	11,683,710	3,250,800	14,934,510	4,927,920 442,250	4 Nil	1,325,000 748,360 187,090	4 4 4	4 4 4	
Lensed to or worked by the Glasgow and South- and South- Western	Ayr and Maybole - - -	34,500	—*	34,500	34,500	7	—	—	
	Kilmarnock and Troon - -	40,000	—	40,000	40,000	5½	—	—	
Glasgow, Yoker, and Clydebank - - -	Worked by the North British.								
Great North of Scotland - - - - -	4,090,480	1,203,354	5,293,834	920,132 102,822* 397,396†	1½ Nil Nil	960,252 363,862	4 4	4 4	
Buckie Extension - - - - -	270,000	—	270,000	—	—	269,736	4	4	
Greenock and Wemyss Bay - - - - -	Worked by the Caledonian.								
Highland - - - - -	3,973,113	1,656,413	5,629,526	1,911,048	4	76,000	6	6	
Killin - - - - -	Worked by the Caledonian.								
Kilmarnock and Troon - - - - -	Leased to the Glasgow and South-Western.								
Kilsyth and Bonnybridge - - - - -	Worked by the Caledonian.								
Kirkcaldy and District - - - - -	300,000	100,000	400,000	12,197	Nil	—	—	—	
Leamingshire and Ayrshire - - - - -	Worked by the Caledonian.								
Leven Harbour Dock and Railway - - -	Line sold to the North British under Act 52 & 53 Vict. c. 90.								
Moffatt - - - - -	Amalgamated with the Caledonian under Act 52 Vict. c. 12.								
Newport - - - - -	Leased to the North British.								
North British - - - - -	35,355,385	9,317,919	44,673,304	8,180,613 5,758,128	2½ 3	—	—	—	

1st December 1889.—SCOTLAND—continued.

SHARE CAPITAL.				CAPITAL RAISED BY LOANS AND DEBENTURE STOCK.					TOTAL CAPITAL paid up and raised by Loans and Debenture Stock.	SUBSCRIPTIONS TO OTHER COMPANIES.	REMARKS.
Preferential.			Total Paid-up Stock and Share Capital.	Loans.		Debenture Stock.		Total raised by Loans and Debenture Stock.			
Amount.	Preferential Rate of Dividend.	Rate of Dividend paid.		Amount.	Rate of Interest.	Amount.	Rate of Interest.				
£	Per cent.	Per cent.	£	£	Per cent.	£	Per cent.	£	£	£	
—	—	—	8,962	1,750	4½	—	—	1,750	10,712	—	The revenue never paid the working expenses, and in consequence the working of the line was discontinued in 1869.
—	—	—	2,125,000	—	—	708,333	4	708,333	2,833,333	—	
1,533,720	4	4	11,223,820	22,720	3	2,884,437	4	2,975,967	14,199,787	403,627	As at 31st January 1890.
1,380,000	4	4		27,500	3½						* Capitalized value of Land
145,110	4	4		41,310*	5						Rentcharges.
358,430	4	4									
175,940	4	4									
—	—	—	34,500	—	—	—	—	—	34,500	—	*Borrowing powers transferred to the "Glasgow and South-
—	—	—	40,000	—	—	—	—	—	40,000	—	Western " Company.
598,556	4	4	3,961,784	10,035	3½	976,151	4	1,154,833	5,116,617	—	As at 31st January 1890.
398,764	4	4		149,697	3½						* Deferred ordinary stock No. 1
134,050†	4½	4½		18,950	4						entitled to participate <i>pari</i>
90,950	5	5									<i>passu</i> with the ordinary
											stock in any dividend beyond
											3 per cent.
											† Deferred ordinary stock No. 2
											entitled to participate <i>pari</i>
											<i>passu</i> with the ordinary
											stock and deferred stock
											No. 1 in any dividend beyond
											5 per cent.
											‡ Dividend 4½ per cent. to
											31st July 1892, and 4 per
											cent. thereafter.
—	—	—	269,736	—	—	—	—	—	269,736	—	
513,650	4½	4½	3,004,778	—	—	1,133,017	4	1,523,050	4,527,828	—	As at 28th February 1890.
400,000	5	5				390,033	4½				
45,000	5	5									
59,080	6	6									
—	—	—	12,197	—	—	—	—	—	12,197	—	
11,070	1½	1½	34,655,385	98,791	3	73,538	3	8,335,661	42,991,046	779,988	As at 31st January 1890.
2,302,103	4	4		500	3½	6,163,485	4				* This stock does not carry
5,379,862	4½	4½		117,039	3½	508,520	4½				dividend till 1st August
1,415,230	5	5		47,263	3½	782,955	4½				1890.
563,379	6	6		142,441	4	400,679	5				
1,045,000*	4	—		450	4½						

NAME OF COMPANY.			AUTHORISED CAPITAL.			PAID-UP STOCK AND				
			By Shares and Stock.	By Loans and Debenture Stock.	Total.	Ordinary.		Guaranteed.		
						Amount.	Rate of Dividend paid.	Amount.	Guaranteed Rate of Dividend.	Rate of Dividend paid.
NORTH BRITISH— <i>cont.</i>			£	£	£	£	Per cent.	£	Per cent.	Per cent.
Leased to or worked by the North British.	Anstruther and St. Andrew's	-	117,000	39,000	156,000	56,870 5,000*	Nil Nil	—	—	—
	Blane Valley	- - -	75,000	25,000	100,000	17,000 16,000	$2\frac{4}{17}$ $2\frac{1}{2}$	—	—	—
	Edinburgh and Bathgate	- -	250,000	—	250,000	250,000	5	—	—	—
	Forth and Clyde Junction	-	192,000	64,000	256,000	106,390	7	64,000	5	5
	Glasgow, Yoker, and Clydebank	-	102,500	34,130	136,630	85,000	$5\frac{1}{2}$	—	—	—
	Newport	- - -	66,000	15,300	81,300	46,000	$4\frac{1}{2}$	—	—	—
	Strathendrick and Aberfoyle	-	50,000	16,667	66,667	50,000	$1\frac{7}{8}$	—	—	—
Portpatrick and Wigtownshire Joint Committee.			491,980	188,000	679,980	—	—	491,980	$8\frac{1}{2}$	$3\frac{1}{2}$
Solway Junction - - - -			Leased to the Caledonian.							
Strathendrick and Aberfoyle - -			Worked by the North British.							
Wemyss and Buckhaven - - -			Line sold to the "North British" under Act 52 & 53 Vict. c. 90.							
West Highland - - - -			540,000	180,000	720,000	1,142	Nil	—	—	—
TOTAL SCOTLAND - -			98,543,678	27,166,423	125,710,101	41,491,859	—	13,625,934	—	—

1st December 1889.—SCOTLAND—continued.

SHARE CAPITAL.				CAPITAL RAISED BY LOANS AND DEBENTURE STOCK.					TOTAL CAPITAL paid up and raised by Loans and Debenture Stock.	SUBSCRIPTIONS TO OTHER COMPANIES.	REMARKS.
Preferential.			Total Paid-up Stock and Share Capital.	Loans.		Debenture Stock.		Total raised by Loans and Debenture Stock.			
Amount.	Preferential Rate of Dividend.	Rate of Dividend paid.		Amount.	Rate of Interest.	Amount.	Rate of Interest.				
£	Per cent.	Per cent.	£	£	Per cent.	£	Per cent.	£	£	£	
55,000	5	2	116,870	100 34,600	3 ⁷ / ₈ 4	—	—	34,700	151,570	—	As at 31st January 1890. * Deferred ordinary capital.
42,000	4 ¹ / ₂	4 ¹ / ₂	75,000	150	4	12,400	4	12,550	87,550	11,790	As at 31st January 1890.
—	—	—	250,000	—	—	—	—	—	250,000	—	
4,520 16,480	5 6	5 6	191,390	—	—	61,595	4	61,595	252,985	—	As at 31st January 1890.
—	—	—	85,000	2,500 17,882 4,710	3 ¹ / ₂ 3 ³ / ₄ 4	3,150	4	28,242	113,242	—	As at 31st January 1890.
—	—	—	46,000	6,000 220	3 ¹ / ₂ 4	4,200	4	10,420	56,420	—	
—	—	—	50,000	1,179 9,000	4 4 ¹ / ₂	—	—	10,179	60,179	—	
—	—	—	491,980	70,062	3 ¹ / ₂	—	—	70,062	562,042	—	As at 31st January 1890.
—	—	—	1,142	—	—	—	—	—	1,142	—	
7,432,380	—	—	92,550,123	1,432,266	—	22,001,588	—	23,433,854	115,983,977	1,885,782	TOTAL SCOTLAND.

st December 1889.—IRELAND.

ORIGINAL CAPITAL.				CAPITAL RAISED BY LOANS AND DEBENTURE STOCK.						TOTAL CAPITAL paid up and raised by Loans and Debenture Stock.	SUBSCRIPTIONS TO OTHER COMPANIES.	REMARKS.
Preferential.			Total Paid-up Stock and Share Capital.	Loans.		Debenture Stock.		Total raised by Loans and Debenture Stock.				
Amount.	Preferential Rate of Dividend.	Rate of Dividend paid.		Amount.	Rate of Interest.	Amount.	Rate of Interest.					
£	Per cent.	Per cent.	£	£	Per cent.	£	Per cent.	£	£	£		
—	—	—	61,574	20,000 10,000	4 5	—	—	30,000	91,574	—		
172,402 50,000 248,141	4 4½ 5	4 4½ 5	706,493	2,807 3,807*	3½ 5	138,000 144,646	3 4	289,260	995,753	7,500	* Capitalized value of Land Rentscharges.	
192,850 144,600	4 4½	4 4½	1,573,033	10,040 4,080 60,200 4,600	4 4½ 4½ 4½	591,736	4	670,656	2,243,689	132,476		
—	—	—	80,600	—	—	41,470	4	41,470	122,070	—		
35,110	5	Nil	120,340	100,000	4	—	—	100,000	220,340	—		
430	5	Nil	29,368	*15,000	4	—	—	15,000	44,368	—	* Borrowed from the Board of Works.	
—	—	—	66,733	19,601	4	—	—	19,601	86,334	—	* Interest at 5 per cent. per annum guaranteed on this amount for 23 years from the opening of the railway by the "Skinners" Company of London.	
44,150	5	1⅜	135,962	19,920 4,970	4½ 5	32,110	4	57,000	192,962	—		
247,108 48,000	4 5½	4 5½	535,108	—	—	66,344 71,656	4 4½	138,000	673,108	17,500		
—	—	—	70,000	—	—	35,000	5	35,000	105,000	—		
—	—	—	40,000	20,000	4	—	—	20,000	60,000	—	* Baronial Guaranteed Shares.	
—	—	—	80,000	10,000	4	30,000	4	40,000	120,000	—	* Baronial Guaranteed Shares.	
6,080 2,000	4½ 5	4½ 5	126,420	700 4,450 700	4 4½ 5	30,100 300 2,500	4 4½ 4½	38,750	165,170	—		

NAME OF COMPANY.	AUTHORISED CAPITAL.			PAID-UP STOCK.					
	By Shares and Stock.	By Loans and Debenture Stock.	Total.	Ordinary.		Guaranteed.			
				Amount.	Rate of Dividend paid.	Amount.	Guaranteed Rate of Dividend.	Rate of Dividend paid.	
<i>Dublin and Kingstown</i> - - - -	£	£	£	£	Per cent.	£	Per cent.	Per cent.	
	<i>Leased to the Dublin, Wicklow, and Wexford.</i>								
Dublin, Wicklow, and Wexford - -	1,815,000	697,233	2,512,233	700,150	1½	—	—	—	—
City of Dublin Junction - - -	300,000	100,000	400,000	20,000	Nil	198,002	4	4	4
Leased to the Dublin, Wicklow, and Wexford. } Dublin and Kingstown - -	350,000	110,000	460,000	350,000	9½	—	—	—	—
Dundalk, Newry, and Greenore - - -	451,000	—*	451,000	353,500	Nil	—	—	—	—
<i>Enniskillen, Bundoran, and Sligo</i> - -	<i>Worked by the Great Northern of Ireland.</i>								
<i>Fermoy and Lismore</i> - - - -	<i>Worked by the Great Southern and Western.</i>								
Finn Valley - - - -	80,000	35,000	115,000	44,980	Nil	—	—	—	—
Worked by the Finn Valley. } West Donegal - - -	100,000	50,000	150,000	32,727	Nil	7,260 16,500	5 5	5 —	5 —
Great Northern of Ireland - - -	5,424,350	1,919,368	7,343,718	3,413,356	4	100,000 120,000 507,416	4 4½ 5	4 4½ 5	4 4½ 5
Worked by the Gt. Northern of Ireland. } Enniskillen, Bundoran, and Sligo. - - -	300,000	253,353	553,353	46,850	Nil	—	—	—	—
<i>Great Northern and Western of Ireland</i> -	<i>Worked by the Midland Great Western of Ireland.</i>								
Great Southern and Western of Ireland -	6,309,940	1,873,965	8,183,905	4,970,055	5	—	—	—	—
Worked by the Gt. Southern and Western of Ireland. } Clara and Banagher - -	85,000	68,300	153,300	60,219	Nil	—	—	—	—
Fermoy and Lismore - - -	100,000	33,000	133,000	100,000	Nil	—	—	—	—
<i>Ilen Valley</i> - - - -	<i>Worked by the Cork, Bandon, and South Coast.</i>								
Kanturk and Newmarket - - -	50,000	20,000	70,000	10,000	Nil	40,000	5	5	5
<i>Kilkenny Junction</i> - - - -	<i>Worked by the Waterford and Central Ireland.</i>								
Kingstown and Kingsbridge Junction -	300,000	150,000	450,000	—	—	—	—	—	—
<i>Letterkenny</i> - - - -	<i>Worked by the Londonderry and Lough Swilly.</i>								
<i>Limavady and Dungiven</i> - - -	<i>Worked by the Belfast and Northern Counties.</i>								
<i>Limerick and Kerry</i> - - - -	<i>Worked by the Waterford and Limerick.</i>								
Listowel and Ballybunion - - -	22,000	11,000	33,000	22,000	Nil	—	—	—	—
Londonderry and Lough Swilly - - -	135,000	29,600	164,600	41,489	1	—	—	—	—
Worked by the Londonderry and Lough Swilly. } Letterkenny - - -	150,000	123,000	273,000	57,155	Nil	—	—	—	—

1st December 1889.—IRELAND—continued.

SHARE CAPITAL.			CAPITAL RAISED BY LOANS AND DEBENTURE STOCK.						TOTAL CAPITAL paid up and raised by Loans and Debenture Stock.	SUBSCRIPTIONS TO OTHER COMPANIES.	REMARKS.
Preferential.			Total Paid-up Stock and Share Capital.	Loans.		Debenture Stock.		Total raised by Loans and Debenture Stock.			
Amount.	Preferential Rate of Dividend.	Rate of Dividend paid.		Amount.	Rate of Interest.	Amount.	Rate of Interest.				
£	Per cent.	Per cent.	£	£	Per cent.	£	Per cent.	£	£	£	
120,000	4	4	1,770,150	—	—	299,805	4	652,220	2,422,370	—	
150,000	4½	4½				257,985	4½				
600,000	5	5				94,430	4½				
200,000	6	6									
10,000	4	Nil	228,002	—	—	—	—	—	228,002	—	Line in course of construction.
—	—	—	350,000	400	4	69,600	3½	70,000	420,000	—	
—	—	—	353,500	—	—	—	—	—	353,500	—	* Borrowing powers transferred to the "London and North-Western" Railway Company.
20,000	6	Nil	64,980	4,537	3½	30,462	5	34,999	99,979	13,560	
680	5	Nil	57,167	40,000	4	—	—	40,000	97,167	—	* The 16,500 <i>l.</i> of guaranteed capital was raised under the West Donegal Light Railway order of 1886; and for the year ended 31st October 1889 there was paid as interest 137 <i>l.</i> , this sum being the amount allowed by the arbitrators in respect of the capital raised and expended under the above-mentioned order.
224,550	3½	3½	5,290,347	—	—	966,869	4	1,827,592	7,117,939	2,000	
645,000	4	4				466,687	4½				
275,025	4½	4½				60,011	4½				
						334,525	5				
100,000	5	Nil	146,850	88,663	4	153,453	3	249,765	396,615	—	
						7,649	5				
1,329,100	4	4	6,299,155	—	—	1,838,379	4	1,838,379	8,137,534	13,000	
20,000	5	Nil	80,219	66,187	4	—	—	66,187	146,406	—	
—	—	—	100,000	32,055	5	—	—	32,055	132,055	—	
—	—	—	50,000	—	—	17,140	5	17,140	67,140	—	
—	—	—	—	—	—	—	—	—	—	—	
—	—	—	22,000	11,000	5	—	—	11,000	33,000	—	
49,625	5	5	91,114	7,766	4	10,000	5	29,514	120,628	—	
				11,748	5						
—	—	—	57,155	85,000	4	—	—	87,750	144,905	—	
				2,750	5						

NAME OF COMPANY.	AUTHORISED CAPITAL.			PAID-UP STOCK AND DIVIDENDS.				
	By Shares and Stock.	By Loans and Debenture Stock.	Total.	Ordinary.		Guaranteed.		
				Amount.	Rate of Dividend paid.	Amount.	Guaranteed Rate of Dividend.	Rate of Dividend paid.
Midland Great Western of Ireland - -	£ 3,500,000	£ 1,883,215	£ 5,383,215	£ 2,370,000	Per cent. 5	£ —	Per cent. —	Per cent. —
Worked by the Midland Great Western of Ireland. } Great Northern and Western of Ireland.	455,160	292,540	747,700	383,025	5½	—	—	—
Parsonstown and Portumna Bridge - -	—*	—*	—*	—	—	—	—	—
Rathkeale and Newcastle Junction - -	Worked by the Waterford and Limerick.							
Sligo, Leitrim, and Northern Counties -	240,000	120,000	360,000	100,000	Nil	50,000	5	5
Southern - - - - -	Worked by the Waterford and Limerick.							
Tralee and Fenit - - - -	Worked by the Waterford and Limerick.							
Waterford and Central Ireland - - -	450,000	189,000	639,000	250,000	Nil	—	—	—
Central Ireland Railways - - -	120,000	40,000	160,000	15,000 12,480	4½ 5	—	—	—
Worked by the Waterford and Central Ireland. } Kilkenny Junction - - -	214,000	256,480	470,480	60,575	Nil	—	—	—
Waterford and Limerick - - - - -	1,603,530	621,600	2,225,130	597,550	Nil	—	—	—
Lensed to or worked by the Waterford and Limerick. {	Athenry and Ennis Junction	195,000	91,600	286,600	99,190	Nil	—	—
	Athenry and Tuam - - -	90,000	30,000	120,000	61,828	1	—	—
	Limerick and Kerry - - -	127,450	282,550	410,000	110,000	Nil	17,450	5
	Rathkeale and Newcastle Junction.	28,180	93,000	121,180	16,513	Nil	—	—
	Southern - - - - -	201,000	181,900	382,900	71,320	Nil	62,900	5
	Tralee and Fenit - - -	45,000	15,000	60,000	13,850	Nil	30,000	5
Waterford and Tramore - - - - -	58,000	19,350	77,350	48,000	2½	—	—	—
Waterford and Wexford - - - - -	200,100	66,700	266,800	62,984	Nil	—	—	—
Waterford, Dungarvan, and Lismore - -	280,000	113,333	393,333	280,000	5*	—	—	—
West Donegal " " " - -	Worked by the Finn Valley.							
TOTAL IRELAND - - -	27,881,142	11,428,809	39,309,951	16,429,556	—	1,234,528	—	—

31st December 1889.—IRELAND—continued.

SHARE CAPITAL.			CAPITAL RAISED BY LOANS AND DEBENTURE STOCK.						TOTAL CAPITAL paid up and raised by Loans and Debenture Stock.	SUBSCRIPTIONS TO OTHER COMPANIES.	REMARKS.
Preferential.			Loans.		Debenture Stock.		Total raised by Loans and Debenture Stock.				
Amount.	Preferential Rate of Dividend.	Rate of Dividend paid.	Amount.	Rate of Interest.	Amount.	Rate of Interest.					
£	Per cent.	Per cent.	£	£	Per cent.	£	Per cent.	£	£	£	
698,865 300,000	4 5	4 5	3,868,365	—	—	1,068,684 493,000 201,700	4 4½ 4½	1,763,384	5,131,749	113,350	
50,440 17,020	5 6	5 6	450,485	—	—	276,339	4½	276,339	726,824	—	
—	—	—	—	—	—	—	—	—	—	—	* The line was taken possession of by a creditor on 6th January 1879, and has been closed for traffic since that date.
50,000	5	Nil	200,000	100,000	4	—	—	100,000	300,000	—	
196,885	6	3½	446,885	23,025 2,300 15,085	4 4½ 4½	52,200 12,700 82,288	4½ 4½ 5	187,598	634,483	8,750	As at 29th September 1889.
—	—	—	27,480	—	—	—	—	—	27,480	—	As at 29th September 1889.
40,880	6	Nil	101,455	2,320*	5	233,871	5	236,191	337,646	1,898	As at 1st November 1889. * Capitalized value of Land Rentcharges.
318,950 362,900 251,275 29,150	4 4½ 5 5½	4 4½ 5 5½	1,559,825	—	—	180,809 41,150 10,000 372,974	4 4½ 4½ 4½	604,933	2,164,758	117,562	
66,590 20,000	5 5	Nil Nil	185,780	66,976	5	—	—	66,976	252,756	—	
—	—	—	61,828	16,978	4	—	—	16,978	78,806	—	As at 25th March 1890.
—	—	—	127,450	15,800	6	170,050 17,500 73,768	4 4 4	277,118	404,568	—	Under the powers of the Company's Act of 1884, the guaranteed shares and the debenture loans are being converted into debenture stock.
10,050	5	Nil	26,563	16,600	5	76,400	5	93,000	119,563	—	
67,650	5	Nil	201,870	69,594	4	34,803	4	104,397	306,267	—	
—	—	—	43,850	15,000	5	—	—	15,000	58,850	—	
10,000	5	5	58,000	5,800 13,550	4 4½	—	—	19,350	77,350	—	
—	—	—	62,984	66,700	5	—	—	66,700	129,684	—	* This dividend is payable by presentment to be levied off the rateable property of the county of Waterford, and of the county of the city of Waterford, for five years granted for the construction of the railway, and for 35 years after its opening for public traffic.
—	—	—	280,000	93,270 20,000	4 5	—	—	113,270	393,270	—	
25,006	—	—	25,789,090	1,203,979	—	9,188,593	—	10,392,572	36,181,662	427,596	TOTAL IRELAND.

NAME OF COMPANY.	AUTHORISED CAPITAL.			PAID-UP STOCK				
	By Shares and Stock.	By Loans and Debenture Stock.	Total.	Ordinary.		Guaranteed.		
				Amount.	Rate of Dividend paid.	Amount.	Guaranteed Rate of Dividend.	Rate of Dividend paid.

LIGHT RAILWAYS AUTHORISED UNDER THE

	£	£	£	£	Per cent.	£	Per cent.	Per cent.
Armagh and Keady - - - -	40,000	—	40,000	231 1,780	4 Nil	—	—	—
Ballinascahy and Timoleague Junction -	23,000	—	23,000	—	—	23,000	5	5
Bessbrook and Newry Tramway - -	20,000	6,500	26,500	15,000	Nil	—	—	—
Carrickfergus Harbour Junction - -	7,500	5,000	12,500	730	Nil	6,500	5	4½
Cavan, Leitrim, and Roscommon - -	300,000	—	300,000	—	—	197,545	5	5
Clogher Valley Tramway - - -	150,000	—	150,000	—	—	126,770	5	5
Cork and Muskerry - - - -	75,000	—	75,000	—	—	75,000	5	5
Loughrea and Attymon - - - -	70,000	—	70,000	—	—	24,680	5	Nil
Mitchelstown and Fermoy - - - -	60,000	—	60,000	30,940	Nil	—	—	—
Timoleague and Courtmacsherry Extension -	12,000	—	12,000	—	—	12,000	5	5
Tralee and Dingle - - - -	150,000	—	150,000	17,605	Nil	86,920	4	4
West Carbery - - - -	57,000	—	57,000	—	—	57,000	5	5
West Clare (Limited) - - - -	180,000	—	180,000	16,500	Nil	163,488	4	4
West Kerry - - - -	120,000	—	120,000	—	—	40	4	Nil
TOTAL LIGHT RAILWAYS - - -	1,264,500	11,500	1,276,000	82,786	—	772,943	—	—
GRAND TOTAL, IRELAND - -	29,145,642	11,440,309	40,585,951	16,512,342	—	2,107,471	—	—

t December 1889.—IRELAND—*continued*.

ORIGINAL CAPITAL.				CAPITAL RAISED BY LOANS AND DEBENTURE STOCK.						TOTAL CAPITAL paid up and raised by Loans and Debenture Stock.	SUBSCRIPTIONS TO OTHER COMPANIES.	REMARKS.
Preferential.			Total Paid-up Stock and Share Capital.	Loans.		Debenture Stock.		Total raised by Loans and Debenture Stock.				
Amount.	Preferential Rate of Dividend.	Rate of Dividend paid.		Amount.	Rate of Interest.	Amount.	Rate of Interest.					

RAMWAYS (IRELAND) ACTS, 1860 TO 1881.

—	—	—	£ 2,011	—	—	—	—	—	£ 2,011	—	
—	—	—	23,000	—	—	—	—	—	23,000	—	Line not yet open for traffic.
—	—	—	15,000	—	—	—	—	—	15,000	—	
—	—	—	7,230	—	—	—	—	—	7,230	—	
—	—	—	197,545	—	—	—	—	—	197,545	—	As at 31st October 1889.
—	—	—	126,770	—	—	—	—	—	126,770	—	As at 30th September 1889.
—	—	—	75,000	—	—	—	—	—	75,000	—	
—	—	—	24,680	—	—	—	—	—	24,680	—	
—	—	—	30,940	—	—	—	—	—	30,940	—	Line in course of construction.
—	—	—	12,000	—	—	—	—	—	12,000	—	Line not open for traffic.
—	—	—	104,525	—	—	—	—	—	104,525	—	
—	—	—	57,000	—	—	—	—	—	57,000	—	
—	—	—	179,988	—	—	—	—	—	179,988	—	As at 31st October 1889.
—	—	—	40	—	—	—	—	—	40	—	
—	—	—	855,729	—	—	—	—	—	855,729	—	TOTAL LIGHT RAILWAYS.
1,025,006	—	—	26,644,819	1,203,979	—	9,188,593	—	10,392,572	37,037,391	427,596	GRAND TOTAL, IRELAND.

RAILWAY RETURNS.—1889.

N^o. 2. — T R A F F I C, &c.

RETURN showing the NUMBER of PASSENGERS and QUANTITY of GOODS conveyed,
and the RECEIPTS therefrom, upon the RAILWAYS in ENGLAND and WALES,
SCOTLAND, and IRELAND, during the Year 1889.

No. 2.—Traffic; &c., ENGLA

NAME OF COMPANY.	LENGTH OF LINE IN MILES open on 31st December 1889.			PASSENGER TRAFFIC.				Holders of Season or Perio- dical Tickets.	GOODS TRAFFIC.		NUMBER OF M TRAVELLED TRAINS.	
				NUMBER OF PASSENGERS CONVEYED (exclusive of Season and Periodical Tickets).					Minerals.	General Merchandise.	Passenger Trains.	Goods and Mineral Trains.
	Double or more.	Single.	TOTAL.	1st Class.	2d Class.	3d Class (including Parliamentary).	TOTAL.					
<i>Abbotsbury</i> - - - - -	<i>Worked by the Great Western.</i>											
<i>Aberdare</i> - - - - -	<i>Leased to the Taff Vale.</i>											
<i>Abingdon</i> - - - - -	<i>Leased to the Great Western.</i>											
Alexandra (Newport and South Wales) Dock and Railway.	3	-	3	-	-	-	-	-	2,358,673	276,510	-	41,150
Aylesbury and Buckingham - - - -	-	12	12	594	2,596	21,927	25,117	-	21,090	4,947	Mixed	
<i>Bala and Festiniog</i> - - - - -	<i>Worked by the Great Western.</i>											
<i>Banbury and Cheltenham Direct</i> - - -	<i>Worked by the Great Western.</i>											
<i>Barnoldswick</i> - - - - -	<i>Worked by the Midland.</i>											
Barry Dock and Railway - - - - -	23	4	27	5,395	23,670	649,606	678,671	42*	1,113,644	27,364	39,208	264,041
<i>Birkenhead</i> - - - - -	<i>Vested jointly in the Great Western and the London and North-Western.</i>											
Bishop's Castle - - - - -	-	10	10	602	3,579	26,019	30,200	-	7,449	4,606	Mixed	
<i>Brading Harbour Improvement and Railway</i>	<i>Worked by the Isle of Wight.</i>											
Brecon and Merthyr Tydfil Junction - -	10	49	59	6,276	11,529	521,787	539,592	33	1,676,737	199,693	158,761	256,710
<i>Bridport</i> - - - - -	<i>Leased to the Great Western.</i>											
<i>Brighton and Dyke</i> - - - - -	<i>Worked by the London, Brighton, and South Coast.</i>											
Bristol Port Railway and Pier - - - -	-	6	6	3,316	11,028	368,929	383,273	229	-	-	42,547	-
<i>Buckfastleigh, Totnes, and South Devon</i> -	<i>Worked by the Great Western.</i>											
<i>Buckley</i> - - - - -	<i>Worked by the Wrexham, Mold, and Connah's Quay.</i>											
Burry Port and Gwendreath Valley - -	-	20	20	-	-	-	-	-	169,524	-	-	7,840
<i>Calne</i> - - - - -	<i>Worked by the Great Western.</i>											
Cambrian (including the Mid Wales and the Llanyblodwell Branch of the Potteries, Shrewsbury, and North Wales.)	9	223	232	27,780	78,409	1,630,699	1,736,888	101	326,638	167,093	704,984	487,818
Cannock Chase and Wolverhampton - -	-	6	6	-	-	-	-	-	547,082	-	-	-
Central Wales and Carmarthen Junction -	-	13	13	2,376	4,462	114,819	121,657	-	23,652	19,582	-	-
<i>Charnwood Forest</i> - - - - -	<i>Worked by the London and North-Western.</i>											
Cheshire Lines Committee (including Southport and Cheshire Lines Extension.)	117	18	135	418,078	311,243	7,155,350	7,884,671	7,158*	905,184	2,376,126	2,230,088	1,456,484
Cleator and Workington Junction - - -	13	16	29	1,291	3,904	67,865	73,060	20	1,221,091	30,612	25,782	135,518
Cockermouth, Keswick, and Penrith - -	-	32	32	9,092	13,142	301,263	323,497	1,658	265,042	84,000	111,160	126,811
<i>Colchester, Stour Valley, Sudbury, and Halstead</i>	<i>Leased to the Great Eastern.</i>											
Colne Valley and Halstead - - - - -	-	19	19	3,397	5,109	157,717	166,223	30	35,666	33,143	Mixed.	
<i>Cornwall Minerals</i> - - - - -	<i>Worked by the Great Western.</i>											
Corris - - - - -	-	11	11	2,381	-	55,149	57,530	334	15,218	1,862	13,190	9,118
<i>Corwen and Bala</i> - - - - -	<i>Leased to the Great Western.</i>											
<i>Devon and Somerset</i> - - - - -	<i>Worked by the Great Western.</i>											
<i>Didcot, Newbury, and Southampton</i> - - -	<i>Worked by the Great Western.</i>											
Dover and Deal Committee - - - - -	9	-	9	5,484	15,176	249,589	270,249	28	11,984		75,633	5,610
Dowlais (including the "Dowlais Extension.")	2	-	2	No public traffic.								

* Equivalent number of annual tickets.

D WALES, in 1889.

RECEIPTS (GROSS) FROM PASSENGER TRAFFIC.							RECEIPTS (GROSS) FROM GOODS TRAFFIC.				MISCELLANEOUS, RENTS, TOLLS, NAVIGATION, STEAMBOATS, &c.	TOTAL RECEIPTS FROM ALL SOURCES OF TRAFFIC.	NAME OF COMPANY.
RECEIPTS FROM PASSENGERS.				Excess Luggage, Parcels, Carriages, Horses, Dogs, &c.	Mails.	TOTAL Receipts from Passenger Traffic.	Merchandise.	Live Stock.	Minerals.	TOTAL Receipts from Goods Traffic.			
2d Class.	3d Class (including Parliamentary).	Holders of Season or Periodical Tickets.	TOTAL from Passengers.										
£	£	£	£	£	£	£	£	£	£	£	£	£	
													Abbotsbury.
													Aberdare.
													Abingdon.
							2,537	-	14,640	17,186	147,064	164,250	Alexandra (Newport and South Wales) Docks and Railway.
131	869	-	1,054	384	16	1,454	600	30	1,190	1,820	65	3,339	Aylesbury and Buckingham.
													Bala and Festiniog.
													Banbury and Cheltenham Direct.
													Barnoldswick.
657	8,612	231	9,706	208	44	9,958	2,775	-	32,783	35,558	40,562	86,078	Barry Dock and Railway.
													Birkenhead.
234	966	-	1,250	182	12	1,444	1,176	123	779	2,078	90	3,612	Bishop's Castle.
661	15,427	121	16,786	1,292	-	18,078	17,793	898	50,667	69,358	5,217	92,653	Brading Harbour Improvement and Railway.
													Brecon and Merthyr Tydfil Junction.
													Bridport.
													Brighton and Dyke.
235	3,908	216	4,459	58	-	4,517	-	-	-	-	1,743	6,260	Bristol Port Railway and Pier.
													Buckfastleigh, Totnes, and South Devon.
									5,677	5,677	3,595	9,272	Buckley.
													Burry Port and Gwendreath Valley.
6,229	85,879	1,127	98,029	14,443	6,563	119,035	61,305	10,871	33,159	105,335	6,341	230,711	Calne.
													Cambrian.
									3,420	3,420	1,020	4,440	Cannock Chase and Wolverhampton.
322	3,660	-	4,204	632	60	4,896	2,238	725	865	3,828	191	8,915	Central Wales and Carmarthen Junction.
9,225	210,801	28,294	271,609	37,930	728	310,267	370,885	9,467	35,625	415,977	22,077	748,321	Charnwood Forest.
96	1,222	50	1,421	87	-	1,508	4,414	17	47,060	51,491	416	53,415	Cheshire Lines Committee.
1,027	12,105	409	14,600	1,297	230	16,127	10,345	574	22,582	33,501	495	50,123	Cleator and Workington Junction.
259	3,066	43	3,606	570	50	4,226	4,965	146	3,150	8,261	766	13,253	Cockermouth, Keswick, and Penrith.
													Colchester, Stour Valley, Sudbury, and Halstead.
													Colne Valley and Halstead.
													Cornwall Minerals.
	863	15	954	15	50	1,019	399	-	1,526	1,925	124	3,068	Corris.
													Corwen and Bala.
													Devon and Somerset.
485	5,207	81	6,013	473		6,486	1,672	25	-	697	577	7,760	Didcot, Newbury and Southampton.
													Dover and Deal Committee.
													Dorset.

† Including receipts from Minerals.

NAME OF COMPANY.	LENGTH OF LINE IN MILES open on 31st December 1889.			PASSENGER TRAFFIC.				Holders of Season or Periodical Tickets.	GOODS TRAFFIC.		NUMBER OF MILES TRAVELLED BY TRAINS.		
				NUMBER OF PASSENGERS CONVEYED (exclusive of Season and Periodical Tickets).					Minerals.	General Merchandise.	Passenger Trains.	Goods and Mineral Trains.	
	Double or more.	Single.	TOTAL.	1st Class.	2d Class.	3d Class (including Parliamentary).	TOTAL.						
<i>Downham and Stoke Ferry</i> - - - -	<i>Leased to the Great Eastern.</i>												
East and West Junction (Including the "Evesham, Redditch, and Stratford-upon-Avon Junction.")	-	41	41	3,645	3,821	158,191	165,657	6	31,489	50,850	125,851	65,941	191
East Cornwall Mineral (Calstock to Callington) -	-	7	7	-	-	-	-	-	31,995	6,300	-	14,742	14
Eastern and Midlands: Lynn, Yarmouth, and Norwich Section	<i>See note, p. iii.</i>												
<i>East Gloucestershire</i> - - - -	<i>Worked by the Great Western.</i>												
<i>East Lincolnshire</i> - - - -	<i>Leased to the Great Northern.</i>												
East London (Joint Committee) -	6	1	7	47,545	434,935	5,741,914	6,224,394	151	20,506	52,715	298,589	10,744	300
<i>Elham Valley Light</i> - - - -	<i>Worked by the South-Eastern.</i>												
<i>Ely and Newmarket</i> - - - -	<i>Leased to the Great Eastern.</i>												
<i>Ely and St. Ives</i> - - - -	<i>Worked by the Great Eastern.</i>												
<i>Ely Valley</i> - - - -	<i>Worked by the Great Western.</i>												
<i>Evesham, Redditch, and Stratford-upon-Avon Junction.</i>	<i>Worked by the East and West Junction.</i>												
Exmouth Docks and Railway* - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-
Festiniog - - - -	2	12	14	4,416	3,778	131,616	139,810	189	94,923	14,358	47,764	52,277	100
Forcett - - - -	-	5	5	-	-	-	-	-	172,170	2,127	-	6,520	6
<i>Forest of Dean Central</i> - - - -	<i>Worked by the Great Western.</i>												
<i>Freshwater, Yarmouth, and Newport</i> - - - -	<i>Worked by the Isle of Wight Central.</i>												
Furness (Including half the "Whitehaven, Cleator, and Egremont Joint Line.")	85	49	134	46,883	104,634	1,778,077	1,929,504	597	4,441,012	658,051	608,907	692,503	1,301
Garstang and Knot End - - - -	-	7	7	594	-	38,985	39,579	-	7,459	18,531	Mixed.		18
Glyn Valley - - - -	-	9	9	-	-	-	-	-	13,795	-	-	10,134	10
Golden Valley - - - -	-	19	19	1,580	-	35,771	37,351	-	3,544	3,937	36,324	9,509	40
Gorsedda Junction and Portmadoc - - - -	-	11	11	-	-	-	-	-	31	-	-	248	-
Great Eastern (Including the "Colchester, Stour Valley, Sudbury, and Haistead," "Downham and Stoke Ferry," "Ely and Newmarket," "Ely and St. Ives," "Hunstanton and West Norfolk," "London and Blackwall," "Mellis and Eye," "Northern and Eastern," "Ramsey and Somersham Junction," "Theford and Watton," "Watton and Swaffham," and the "Wivenhoe, and Brightlingsea," half the "Great Northern and Great Eastern Joint Line," and part of the "Tottenham and Hampstead Junction.")	587	513	1,100	1,698,852	5,853,847	67,912,295	75,464,994	25,686	3,202,511	4,597,401	9,803,395	6,552,566	16,360
Great Marlow - - - -	-	3	3	8,084	15,306	112,283	135,673	42	9,794	8,817	Mixed.		30
Great Northern (Including the "East Lincolnshire," "Holme and Ramsey," "Horncastle," "Louth and East Coast," "Muswell Hill and Palace Railway," "Nottingham and Grantham," "Nottingham Suburban," "Roya-ton and Hitchin," "Spilsby and Firsby," "Stamford and Essendine," "Sutton and Willoughby," "Wainfleet and Firsby," and "Skogness Extension," and part of the "Great Northern and Great Eastern Joint Line," and "West Riding and Grimsby.")	619	200	819	828,600	1,409,744	26,581,562	28,819,906	25,288	6,004,488	5,422,140	9,509,190	9,081,248	18,590
<i>Great North of England, Clarence, and Hartlepool Junction.</i>	<i>Leased to the North-Eastern.</i>												
Great Western (Including the "Abbotsbury," "Abingdon," "Alcester Joint Line," "Bala and Festiniog," "Banbury and Cheltenham Direct," "Bradport," "Buckfast-leigh, Totnes, and South Devon," "Caen," "Cornwall" to the 30th June, "Cornwall Minerals," "Corwen and Bala," "Devon and Somerset," "Didcot, Newbury, and Southampton," "East Gloucestershire," "Ely Valley," "Forest of Dean Central," "Haistead," "Kingston and Eardisley," "Leominster and Kingston," "Llanelli Railway and Dock" to the 30th June, "Llangollen and Corwen," "Mariborough," "Milford," "Minehead," "Much Wenlock and Severn Junction," "Nantwich and Market Drayton," "Newent," "Oldbury," "Princetown," "Ross and Ledbury," "Ross and Monmouth," "Staines and West Drayton," "Teign Valley," "Tiverton and North Devon," "Vale of Llangollen," "Wellington and Severn Junction," "Wenlock," and "Wenlock Extensions," "West Cornwall Railway," "West Somerset," "Whitland and Cardigan," "Witney," and "Wye Valley," and jointly with other Companies, the "Birkenhead," "Clifton Extension," "Galesowen," "Hammersmith and City," "Ludlow and Cleve Hill," "Shrewsbury and Hereford," "Shrewsbury and Wellington," "Shrewsbury and Welshpool," "Tenbury," "Vale of Towy," "Victoria Station and Pimlico," "West London," "Weymouth and Portland," and "Wrexham and Minera Extension.")	1,165	1,312	2,477	1,472,086	5,137,423	48,488,791	55,098,300	32,086	19,653,714	6,290,989	16,380,428	16,606,464	33,040

* The Railway is merely a branch line from the Docks to the London and South-Western Railway.
† The Ramey and Somersham line was opened for traffic on the 16th September 1889.

RECEIPTS (GROSS) FROM PASSENGER TRAFFIC.								RECEIPTS (GROSS) FROM GOODS TRAFFIC.				MISCELLANEOUS, RENTS, TOLLS, NAVIGATION, STEAMBOATS, &c.	TOTAL RECEIPTS FROM ALL SOURCES OF TRAFFIC.	NAME OF COMPANY.
RECEIPTS FROM PASSENGERS.				Excess Luggage, Parcels, Carriages, Horses, Dogs, &c.	Mails.	TOTAL Receipts from Passenger Traffic.	Merchandise.	Live Stock.	Minerals.	TOTAL Receipts from Goods Traffic.				
2d Class.	3d Class (including Parliamentary).	Holders of Season or Periodical Tickets.	TOTAL from Passengers.											
£	£	£	£	£	£	£	£	£	£	£	£	£	£	
284	4,774	33	5,654	771	20	6,445	6,701	908	1,892	9,501	79	16,025		Downham and Stoke Ferry.
-	-	-	-	-	-	-	614	-	2,494	3,108	208	3,316		East and West Junction.
-	-	-	-	-	-	-	-	-	-	-	-	-		East Cornwall Mineral (Calstoe to Callington).
-	-	-	-	-	-	-	-	-	-	-	-	-		Eastern and Midlands.
-	-	-	-	-	-	-	-	-	-	-	-	-		Lynn, Yarmouth, and Norwich Section.
-	-	-	-	-	-	-	-	-	-	-	-	-		East Gloucestershire.
-	-	-	-	-	-	-	-	-	-	-	-	-		East Lincolnshire.
4,104	35,202	575	40,540	553	-	41,093	2,718	177	684	3,579	1,879	46,051		East London (Joint Committee).
-	-	-	-	-	-	-	-	-	-	-	-	-		Elham Valley Light.
-	-	-	-	-	-	-	-	-	-	-	-	-		Ely and Newmarket.
-	-	-	-	-	-	-	-	-	-	-	-	-		Ely and St. Ives.
-	-	-	-	-	-	-	-	-	-	-	-	-		Ely Valley.
-	-	-	-	-	-	-	-	-	-	-	-	-		Evesham, Redditch, and Stratford-upon-Avon Junction.
-	-	-	-	-	-	-	-	-	-	-	-	-		Exmouth Docks and Railway.*
314	4,070	1,127	5,960	-	30	5,990	1,635	-	10,184	11,819	235	18,044		Festiniog.
-	-	-	-	-	-	-	105	-	4,644	4,749	23	4,772		Forcett.
-	-	-	-	-	-	-	-	-	-	-	-	-		Forest of Dean Central.
5,875	160,490	3,559	81,178	11,935	3,221	96,334	90,143	4,072	278,762	372,977	41,720	511,031		Freshwater, Yarmouth, and Newport.
-	793	-	815	110	10	935	1,915	-	246	2,161	161	3,267		Furness.
-	-	-	-	-	-	-	-	-	1,485	1,485	-	1,485		Garstang and Knot End.
-	962	1	1,036	67	-	1,103	461	-	207	668	24	1,795		Glyn Valley.
-	-	-	-	-	-	-	-	-	2	2	1	3		Golden Valley.
175,701	1,276,443	191,873	1,777,575	168,577	30,031	1,976,183	1,109,847	91,899	491,727	1,693,473	331,490	4,001,146		Gorsedda Junction and Portmadoc.
-	-	-	-	-	-	-	-	-	-	-	-	-		Great Eastern.
266	1,370	79	1,967	179	25	2,171	926	20	502	1,457	146	3,774		Great Marlow.
78,725	972,869	116,119	1,331,983	217,814	32,294	1,582,094	1,406,069	54,809	840,127	2,301,005	60,733	3,943,832		Great Northern.
-	-	-	-	-	-	-	-	-	-	-	-	-		Great North of England, Clarence, and Hartlepool Junction.
426,828	2,357,205	100,635	3,165,310	516,313	120,746	3,802,369	2,247,010	130,480	2,095,321	4,472,811	194,403	8,469,583		Great Western.

† Amalgamated with the Great Western from the 1st July.

NAME OF COMPANY.	LENGTH OF LINE IN MILES open on 31st December 1889.			PASSENGER TRAFFIC.				GOODS TRAFFIC.		NUMBER OF MILES TRAVELLED BY TRAINS.	
	Double or more.	Single.	TOTAL.	NUMBER OF PASSENGERS CONVEYED (exclusive of Season and Periodical Tickets).				Minerals.	General Merchandise.	Passenger Trains.	Goods and Mineral Trains.
				1st Class.	2d Class.	3d Class (including Parliamentary).	TOTAL.				
Gwendraeth Valleys	-	3	3	-	-	-	-	-	Tons. 99,354	Tons. 5,409	6,453
Halesowen	-	-	-	Worked by the Great Western and Midland Companies.							-
Halifax and Ovenden	-	3	3	7,383	59	976,063	983,505	811	196,894	216,228	-
Hammersmith and City Junction	-	-	-	Worked jointly by the Great Western and Metropolitan.							-
Harborne	-	-	-	Worked by the London and North-Western.							-
Hayling Railways	-	-	-	Leased to the London, Brighton, and South Coast.							-
Helston	-	-	-	Worked by the Great Western.							-
Horncastle	-	-	-	Worked by the Great Northern.							-
Hounslow and Metropolitan	-	-	-	Worked by the Metropolitan District.							-
Hull, Barnsley, and West Riding Junction Railway and Dock.	64	2	66	3,104	3,147	314,013	320,264	157	603,929	427,536	1,754,547
Hunstanton and West Norfolk	-	-	-	Worked by the Great Eastern.							-
Isle of Wight (Including "Bradling Harbour.")	1	13	14	52,019	368,951	223,066	644,036	108½	49,626	25,602	116,283
Isle of Wight Central (Including the "Freshwater, Yarmouth, and Newport.")	-	34	34	29,615	197,324	301,964	529,403	860	72,503	26,367	156,221
Kettering, Thrapstone, and Huntingdon	-	-	-	Worked by the Midland.							-
King's Lynn Docks and Railway*	-	-	-	-	-	-	-	-	-	-	-
Kington and Eardisley	-	-	-	Worked by the Great Western.							-
Lancashire and Yorkshire (Including the "Bury and Tottington District" to the 28th February,† and part of the "North Union," "Preston and Longridge," and "Preston and Wyre" Joint Lines.)	500	22	522	1,025,780	1,722,649	40,287,933	43,036,362	22,164½	11,697,607	5,436,713	6,222,099
Leominster and Kington	-	-	-	Worked by the Great Western.							-
Liskeard and Caradon (Including the "Liskeard and Looe Union Railway and Canal.")	-	22	22	161	2,249	18,883	21,293	1	25,523	2,273	9,487
Liskeard and Looe Union Railway and Canal	-	-	-	Worked by the Liskeard and Caradon.							-
Liverpool, Southport, and Preston Junction	-	-	-	Worked by the West Lancashire.							-
Llanelli and Mynydd Mawr	-	12	12	-	-	-	-	-	89,695	3,997	15,290
Llangollen and Corwen	-	-	-	Leased to the Great Western.							-
London and Blackwall	-	-	-	Leased to the Great Eastern.							-
London and Greenwich	-	-	-	Leased to the South-Eastern.							-
London and North-Western (Including the "Charnwood Forest," "Cleator and Furness," Joint Line, "Harborne," "Mold and Denbigh Junction," and "Shropshire Union," and half of the "Ashby and Nuneaton," "Birkenhead and Branches," "Ludlow and Cleve Hill," "Shrewsbury and Hereford," "Shrewsbury and Welling-ton," "Shrewsbury and Welshpool," and "Tenbury" and part of the "North Union," "Preston and Wyre," "West London," "West London Extension," and "Whitehaven, Cleator, and Egremont.")	1,479	397	1,876	1,928,402	3,280,254	53,949,730	59,158,386	229,660½	29,192,778	8,294,897	20,772,337
London and South-Western (Including the "North Cornwall," "Salisbury Railway and Market House," "Sidmouth," "Stonehouse Pool Improvement and Railway," and half of the "Weymouth and Portland," and part of the "West London Extension.")	584	230	814	2,197,305	4,043,777	31,611,925	37,853,007	197,489	2,341,292	1,729,316	8,991,750
London, Brighton, and South Coast (Including the "Brighton and Dyke," "Hayling Railways," and part of the "Croydon and Oxford," "Victoria Station and Pimlico," "West London Extension," and "Woodside and Croydon.")	302	133	435	1,861,381	2,873,915	36,144,487	40,679,783	20,954	1,760,376	991,080	7,383,046
London, Chatham, and Dover (Including the "Mid-Kent (Bromley to St. Mary's Cray)," and part of the "Victoria Station and Pimlico.")	173	11	184	1,803,637	2,993,965	23,875,932	28,673,534	50,321	1,918,427	518,652	3,620,862
Londonderry (Seaham to Sunderland) (Private Property.)	6	1	7	6,411	9,766	402,232	418,399	49½	1,030,572	38,824	39,660
London, Tilbury, and Southend	64	4	68	144,665	390,794	5,992,084	6,527,543	1,455½	135,997	208,962	750,944
Longton, Adderley Green, and Bucknall	-	-	-	Worked by the North Staffordshire.							-
Lostwithiel and Fowey	-	5	5	Line closed from 1st January 1890.							-
Louth and East Coast	-	-	-	Leased to the Great Northern.							-

* The short tramway belonging to the Company is used only for the transit of goods between the Great Eastern Railway and the Docks.

† Including 175,031 workmen's weekly tickets.

** Including 153,738 workmen's weekly tickets.

†† Including 8,619 workmen's weekly tickets.

‡ Including 14,789½ received for workmen's weekly tickets.

‡‡ Including 18,162½ received for workmen's weekly tickets.

§§ Including 431½ received for workmen's weekly tickets.

RECEIPTS (GROSS) FROM PASSENGER TRAFFIC.								RECEIPTS (GROSS) FROM GOODS TRAFFIC.				MISCELLANEOUS, RENTS, TOLLS, NAVIGATION, STEAMBOATS, &c.	TOTAL RECEIPTS FROM ALL SOURCES OF TRAFFIC.	NAME OF COMPANY.
RECEIPTS FROM PASSENGERS.				Excess Luggage, Parcels, Carriages, Horses, Dogs, &c.	Mails.	TOTAL Receipts from Passenger Traffic.	Merchandise.	Live Stock.	Minerals.	TOTAL Receipts from Goods Traffic.				
2d Class.	3d Class (including Parliamentary).	Holders of Season or Periodical Tickets.	TOTAL from Passengers.											
£	£	£	£	£	£	£	£	£	£	£	£	£	£	
-	-	-	-	-	-	-	162	-	-	2,260	2,422	93	2,515	Gwendraeth Valleys.
														Halesowen.
1	4,029	402	4,623	266	-	4,889	8,522	30	2,807	11,359	422	16,670	Halifax and Ovenden.	
														Hammersmith and City Junction.
														Harborne.
														Hayling Railways.
														Helston.
														Horncastle.
														Hounslow and Metropolitan
154	11,823	359	12,654	8,177	-	20,831	108,794	320	58,573	167,617	75,871	264,319	Hull, Barnsley, and West Riding Junction Railway and Dock.	
														Hunstanton and West Norfolk.
13,110	7,284	631	24,194	1,809	440	26,443	2,723	-	2,199	4,927	4,721	36,091	Isle of Wight.	
8,145	7,596	719	18,231	1,114	113	19,458	2,900	-	3,793	6,693	3,036	29,187	Isle of Wight Central.	
														Kettering, Thrapstone, and Huntingdon.
-	-	-	-	-	-	-	-	-	-	-	-	23,252	23,252	King's Lynn Docks and Railway.*
														Kington and Eardisley.
64,591	1,171,323	174,195	1,475,451	154,805	11,855	1,642,111	1,606,119	42,905	831,627	2,480,651	98,076	4,220,838	Lancashire and Yorkshire.	
														Leominster and Kington.
73	424	5	510	1	-	511	510	-	3,862	4,362	117	4,990	Liskeard and Caradon.	
														Liskeard and Looe Union Railway and Canal.
-	-	-	-	-	-	-	542	-	3,677	4,219	-	4,219	Liverpool, Southport, and Preston Junction.	
														Llanelli and Mynydd Mawr.
														Llangollen and Corwen.
														London and Blackwall.
														London and Greenwich.
336,549	2,575,320	195,635	3,626,150	697,577	184,210	4,507,937	3,875,584	220,700	2,415,729	6,512,013	197,904	11,217,854	London and North-Western.	
242,877	1,177,753	179,218	1,860,423	224,795	23,735	2,113,953	701,659	38,397	245,753	985,809	210,976	3,310,738	London and South-Western.	
		††												
201,168	963,608	208,141	1,592,913	123,623	11,330	1,727,866	363,098	13,902	211,529	588,529	182,628	2,469,023	London, Brighton, and South Coast.	
143,382	459,749	92,074	865,048	78,672	1,450	945,170	164,002	7,266	107,713	278,986	195,302	1,419,458	London, Chatham, and Dover.	
		55												
165	4,782	201	5,304	335	85	5,724	2,265	22	21,360	23,647	9,772	39,143	Londonderry (Seaham to Sunderland).	
10,808	97,433	11,785	135,077	7,643	256	142,931	40,440	10,402	8,492	59,334	36,492	238,807	London, Tilbury, and Southend.	
														Longton, Adderley Green, and Bucknall.
														Lostwithiel and Fowey.
														Louth and East Coast.

† Line sold to the Lancashire and Yorkshire as from the 1st March 1889.
 ‡ Equivalent number of annual tickets.
 The receipts from the steamboat traffic are included with those from the railroad traffic, and not with the miscellaneous receipts. The Company state that no accounts of steamboat receipts are kept, and also that they cannot comply with the requirements of the Regulation of Railways Act of 1871.

NAME OF COMPANY.	LENGTH OF LINE IN MILES open on 31st December 1889.			PASSENGER TRAFFIC.				GOODS TRAFFIC.			NUMBER OF MILES TRAVELLED BY TRAINS.						
				NUMBER OF PASSENGERS CONVEYED (exclusive of Season and Periodical Tickets).				Holders of Season or Perio- dical Tickets.	Minerals.	General Merchandise.	Passenger Trains.	Goods and Mineral Trains.	TOTAL.				
	Double or more.	Single.	TOTAL.	1st Class.	2d Class.	3d Class (including Parliamentary).	TOTAL.										
<i>Ludlow and Clees Hill</i>	Worked by the London and North-Western and Great Western jointly.												Tons.	Tons.			
<i>Lydd</i>	Worked by the South-Eastern.																
<i>Macclesfield Committee</i>	11	-	11	2,866	8,135	407,348	418,849	98†	185,385	91,559	64,448	51,193	115,6				
<i>Maenclochog</i>	-	3	3	Line closed for traffic.													
<i>Manchester and Milford</i>	-	41	41	1,579	5,247	157,585	164,411	4	34,997	23,323	Mixed.		120,8				
<i>Manchester, Sheffield, and Lincolnshire</i> (Including the "Wigan Junction" and part of the "West Riding and Grimsby.")	295	19	314	177,733	267,795	10,823,135	11,268,663	4,219†	7,423,330	4,830,412	2,475,124	5,039,513	7,714,0				
<i>Manchester, South Junction, and Altrincham</i>	9	-	9	181,356	339,791	3,043,940	3,565,087	4,091	1,270,487	640,369	213,548	5,079	213,9				
<i>Marlborough</i>	Worked by the Great Western.																
<i>Maryport and Carlisle</i>	28	13	41	12,478	18,233	528,437	559,163	2,925	910,222	166,715	186,789	271,839	458,0				
<i>Mawddwy</i>	-	7	7	192	353	21,322	21,867	44	3,809	1,484	Mixed.		16,2				
<i>Mellis and Eye</i>	Worked by the Great Eastern.																
<i>Merrybent and Darlington</i>	-	6	6	-	-	-	-	-	6,841	3,160	-	3,800	3,8				
<i>Mersey</i>	4	-	4	303,797	1,985,933	6,035,669	8,325,399	1,540†	-	-	221,699	-	221,6				
<i>Methley Joint Railway</i>	6	-	6	3,300	42	297,002	300,344	37	459,685	182,512	-	-	-				
<i>Metropolitan</i> (Including half the "Hammersmith and City.")	38	-	38	2,788,909	8,406,177	60,023,503	71,218,595	27,133	1,266,538	581,855	1,946,720	12,348	1,950,0				
<i>Metropolitan District</i> (Including the "Richmond," "Ealing," and "Fulham Extensions," and "Hounslow and Metronolitan.")	17	2	19	2,869,070	6,300,006	25,630,905	34,799,981	17,868	187,937	5,275	1,361,160	11,624	1,372,7				
<i>Metropolitan and Metropolitan District City Lines and Extensions.</i>	2	-	2	19,393	114,143	1,274,509	1,408,045	-	-	-	227,016	-	227,0				
<i>Mid Kent (Bromley to St. Mary's Cray)</i>	Leased to the London, Chatham, and Dover.																
<i>Midland</i> (Including the "Barnoldswick," "Kettering, Thrap- stone, and Huntingdon," "Manchester, Buxton, Matlock, and Midland Junction," the "Furness and Midland" Joint Line, and half the "Asby and Nuneston," "Clifton Extension," the "Great Western and Midland" from Malvern Wells to Malvern Link, "Midland and North-Eastern Com- mittee," "Oley and Ilkley," "Tottenham and Hampstead Junction," and part of the "Hales- owen" and "Neath and Brecon.")	1,039	336	1,375	1,344,105	-	34,831,715	36,175,820	24,968	17,687,542	11,279,703	15,415,024	22,222,398	37,038,0				
<i>Midland and North-Eastern Committee</i> (Swinton to Knottingley.)	Included in the returns of the Midland and the North-Eastern Companies.																
<i>Midland and South-Western Junction</i>	-	41	41	2,507	7,654	187,926	198,087	67	36,635	29,549	99,569	65,742	204,35				
<i>Mid Wales</i>	Worked by the Cambrian.																
<i>Milford</i>	Worked by the Great Western.																
<i>Milford Haven Dock and Railway</i>	-	1	1	-	-	-	-	-	7,105	2,870	-	-	-				
<i>Minhead</i>	Worked by the Great Western.																
<i>Mold and Denbigh Junction</i>	Worked by the London and North-Western.																
<i>Much Wenlock and Severn Junction</i>	Worked by the Great Western.																
<i>Muswell Hill and Palace Railway</i>	Worked by the Great Northern.																
<i>Nantwich and Market Drayton</i>	Worked by the Great Western.																
<i>Neath and Brecon</i> *	-	40	40	828	392	89,420	90,640	48	270,889	61,114	Mixed.		41,9				
<i>Newent</i>	Worked by the Great Western.																
<i>Northampton and Banbury Junction</i>	-	15	15	2,556	5,159	91,275	98,900	-	26,725	43,745	23,304	22,622	53,03				
<i>North and South-Western Junction</i>	4	1	5	3,548	31,264	398,057	432,869	33	21	11	-	-	-				
<i>North Cornwall</i>	Worked by the London and South-Western.																
<i>North-Eastern</i> (Including the "Great North of England, Clarence, and the "London and North-Eastern" Joint Line, and "Warley, Redcar, and Middlesbrough Union" to the 26th June,† half the "Midland and North- Eastern Committee," and part of the "Oley and Ilkley.")	1,026	573	1,599	841,874	665,413	36,704,285	38,211,572	11,116	32,279,626	9,312,307	10,905,999	14,755,093	25,360,0				
<i>Northern and Eastern</i>	Leased to the Great Eastern.																
<i>North London</i>	12	-	12	796,516	6,363,835	21,171,178	28,331,529	407,011	1,013,841	1,482,046	1,803,304	272,904	2,076,1				
<i>North Staffordshire</i> (Including the "Longton, Adderley Green, and Bucknall.")	162	41	193	139,758	343,408	5,903,790	6,386,956	2,750††	2,932,431	1,167,887	1,089,817	910,358	2,000,				
<i>North Wales (Narrow Gauge)</i>	-	12	12	385	877	37,752	39,014	190	17,763	973	Mixed.		30,0				
<i>Nottingham and Grantham Railway and Canal</i>	Leased to the Great Northern.																
<i>Nottingham Suburban</i>	Worked by the Great Northern.																
<i>Oldbury</i>	Worked by the Great Western.																
<i>Oldham, Ashton-under-Lyne, and Guide Bridge Junction.</i>	6	-	6	10,989	32,898	1,232,309	1,282,286	707†	250,653	120,808	146,646	33,898	180,				

* Twenty-nine miles of the line were worked by the Midland Company during the half-year ended 30th June, and the Returns for that portion of the line for the half-year are included in those of the Midland Company. The Neath and Brecon Company received a net sum of 1,8882. in respect of the 29 miles for the half-year which sum is not included in the receipts of that Company given above.

† The Company received in addition 67,5937. net from the rents of houses, &c.

†† Including 350,116 workmen's weekly tickets estimated by the Company to represent 4,212,224 journeys.

‡ Including 9,1757. net from rents of property.

RECEIPTS (GROSS) FROM PASSENGER TRAFFIC.								RECEIPTS (GROSS) FROM GOODS TRAFFIC.				MISCELLANEOUS, RENTS, TOLLS, NAVIGATION, STEAMBOATS, &c.	TOTAL RECEIPTS FROM ALL SOURCES OF TRAFFIC.	NAME OF COMPANY.
RECEIPT FROM PASSENGERS.				Excess Luggage, Parcels, Carriages, Horses, Dogs, &c.	Mails.	TOTAL Receipts from Passenger Traffic.	Merchandise.	Live Stock.	Minerals.	TOTAL Receipts from Goods Traffic.				
1st Class.	2d Class (including Parliamentary).	Holders of Season or Periodical Tickets.	TOTAL from Passengers.											
£	£	£	£	£	£	£	£	£	£	£	£	£	£	
														Ludlow and Clew Hill.
														Lydd.
99	173	5,881	278	6,431	719	-	7,150	6,755	112	5,765	12,632	133	19,915	Macclesfield Committee.
														Maenclochog.
76	592	7,756	43	8,667	647	350	9,664	5,374	912	3,337	9,623	288	19,575	Manchester and Milford.
46	12,752	344,060	23,201	400,259	111,907	3,700	515,866	831,455	16,938	564,999	1,413,392	263,857	2,193,115	Manchester, Sheffield, and Lincolnshire.
33	7,073	40,887	24,645	77,343	4,843	200	82,386	14,040	531	12,658	27,229	3,763	113,378	Manchester, South Junction, and Altrincham.
80	1,887	22,841	1,410	27,118	3,407	1,042	31,567	18,267	2,530	61,792	82,589	1,904	116,060	Marlborough.
16	17	477	8	518	54	61	633	214	8	209	483	63	1,182	Maryport and Carlisle.
														Mawddwy.
														Mellis and Eye.
								108	-	359	467	-	467	Merrybent and Darlington.
297	13,756	30,748	5,502	53,303	576	100	53,979	-	-	-	-	1,704	55,683	Mersey.
38	1	1,905	73	2,017	85	-	2,102	3,053	24	7,513	10,590	126	12,818	Methley Joint Railway.
57	105,995	397,256	56,435	613,243	2,081	-	615,324	19,338	388	17,435	37,161	40,436	692,921	Metropolitan.
67	77,103	208,718	36,389	375,177	-	-	375,177	149	-	2,673	2,822	19,103	397,102	Metropolitan District.
29	6,460	24,244	-	33,982	38	-	34,020	-	-	-	-	576	34,596	Metropolitan and Metropolitan District City Lines and Extensions.
62	-	1,663,877	139,681	2,047,220	419,671	51,879	2,518,770	3,068,167	89,515	2,507,918	5,665,600	85,468	8,269,838	Mid Kent (Bromley to St. Mary's Cray).
														Midland.
10	494	6,099	82	6,885	3,058	-	9,943	5,502	509	1,898	7,909	390	18,242	Midland and North-Eastern Committee.
														Midland and South-Western Junction.
														Mid Wales.
														Milford.
								53	-	72	125	176	301	Milford Haven Dock and Railway.
														Minehead.
														Mold and Denbigh Junction.
														Much Wenlock and Severn Junction.
														Muswell Hill and Palace Railway.
166	16	2,809	27	3,008	205	58	3,271	6,208	131	11,242	17,581	54	20,906	Nantwich and Market Drayton.
														Neath and Brecon.
														Newent.
52	211	2,516	-	2,879	359	20	3,258	2,702	463	1,408	4,573	134	7,935	Northampton and Banbury Junction.
27	179	1,481	11	1,698	12	-	1,710	2	-	1	3	1,006	2,719	North and South-Western Junction.
														North Cornwall.
357	59,752	1,385,631	96,975	1,673,715	264,802	46,020	1,934,537	2,163,439	102,097	2,413,882	4,679,418	178,145	6,842,100	North-Eastern.
														Northern and Eastern.
473	64,847	154,859	65,805	295,384	4,515	-	303,499	109,881	3,145	40,914	153,940	30,809	488,248	North London.
773	11,316	137,581	12,540	173,210	27,096	2,500	203,406	212,356	3,520	201,147	417,023	84,286	704,715	North Staffordshire.
32	43	895	417	1,387	-	-	1,387	195	-	1,906	2,101	73	3,561	North Wales (Narrow Gauge).
														Nottingham and Grantham Railway and Canal.
														Nottingham Suburban.
														Oldbury.
370	414	11,957	1,929	14,670	454	27	15,141	6,503	135	4,729	11,410	890	27,451	Oldham, Ashton-under-Lyne, and Guide Bridge Junction.

† Sold to the North Eastern as from the 1st July.

The Committee also received 9,039*l.* net from rents.§§ Including 17,411*l.* received for workmen's weekly tickets.

** Including 39,043 miles run by mixed trains.

*** Including 7,190,818 miles run by mineral trains.

† Equivalent number of annual tickets.

†† Including 2,209 miles run by mixed trains.

¶ The number of workmen's weekly tickets issued was 87,646.

NAME OF COMPANY.	LENGTH OF LINE IN MILES open on 31st December 1889.			PASSENGER TRAFFIC.					GOODS TRAFFIC.		NUMBER OF MILES TRAVELLED BY TRAINS.		
	Double or more.	Single.	TOTAL.	NUMBER OF PASSENGERS CONVEYED (exclusive of Season and Periodical Tickets).				Holders of Season or Perio- dical Tickets.	Minerals.	General Merchandise.	Passenger Trains.	Goods and Mineral Trains.	Tons.
				1st Class.	2d Class.	3d Class (including Parliamentary).	TOTAL.						
Pembroke and Tenby	-	29	29	4,300	31,126	257,268	292,694	33	Tons. 50,744	Tons. 23,149	87,502	49,548	13
Penarth Extension	-	Leased to the Taff Vale.											
Penarth Harbour, Dock, and Railway	-	Leased to the Taff Vale.											
Plymouth and Dartmoor	-	11	11	-	-	-	-	-	54,115	-	-	-	-
Pontypridd, Caerphilly, and Newport	-	See note, p. iii.											
Portmadoc, Croesor, and Beddgelert	-	5	5	-	-	-	-	-	5,983	1,656	-	2,925	-
Potteries, Shrewsbury, and North Wales	-	28	28	Line closed for traffic.									
Princetown	-	Worked by the Great Western.											
Ramsey and Somersham Junction	-	Worked by the Great Eastern.											
Ravenglass and Eskdale	-	7	7	519	-	24,999	25,518	36	921	756	13,488	-	1
Redruth and Chasewater	-	10	10	-	-	-	-	-	28,886	3,253	-	11,702	1
Rhondda and Swansea Bay	-	1	8	9	308	1,722	209,486	13†	206,183	118,651	23,478	21,772	4
Rhymney	-	24	22	46	10,688	37,532	961,168	202†	5,036,267	294,680	175,326	749,278	92
Ross and Ledbury	-	Worked by the Great Western.											
Ross and Monmouth	-	Worked by the Great Western.											
Rowrah and Kelton Fell Mineral	-	3	3	-	-	-	-	-	114,516	1,412	-	6,092	-
Roydon and Hitchin	-	Leased to the Great Northern.											
St. Austell and Pentewan Railway, Harbour, and Dock, for the year ended 29th September 1889.	-	4	4	-	-	-	-	-	45,270	-	-	9,040	-
Salisbury Railway and Market House	-	Worked by the London and South-Western.											
Saundersfoot Railway and Harbour	-	4	4	-	-	-	-	-	27,453	-	-	-	-
Scarborough and Whitby	-	Worked by the North-Eastern.											
Seacombe, Hoylake, and Deeside (including the "Wirral.")	-	4	7	11	45,990	166,587	1,072,999	854	10,229	8,690	157,909	5,553	16
Severn and Wye and Severn Bridge	-	4	33	37	2,299	-	123,104	39	585,809	52,644	71,733	69,780	14
Sheffield and Midland Committee	-	25	2	27	80,941	36,764	3,254,035	1,596†	1,591,116	1,691,107	395,015	314,634	70
Shrewsbury and Hereford	-	Leased to the Great Western and London and North-Western.											
Shropshire Union Railways and Canal	-	Leased to the London and North-Western.											
Sidmouth	-	Worked by the London and South-Western.											
Snailbeach District	-	3	3	-	-	-	-	-	5,135	130	-	2,853	-
Somerset and Dorset, for the year ended 31st October 1889. (Worked by the "Midland" and "London and South-Western" Companies jointly.)	-	27	67	94	19,255	25,554	903,018	191†	437,037	286,410	487,471	520,210	1,00
South-Eastern (Including the "Elham Valley" (Light), "London and Greenwich" and "Lydd" and part of the "Croydon and Oxted" and "Woodside and Croydon" joint lines.)	-	349	44	393	1,097,926	3,683,936	24,874,555	12,028	1,106,629	954,249	5,376,267	1,546,337	7,25
Southport and Cheshire Lines Extension	-	Worked by the Cheshire Lines Committee.											
South Wales Mineral, for the year ended 30th September 1889.	-	13	13	-	-	-	-	-	229,026	3,867	-	66,100	6
Southwold	-	9	9	5,391	-	67,002	72,393	10	6,356	3,187	Mixed.	-	3
Spilsby and Firsby	-	Worked by the Great Northern.											
Staines and West Drayton	-	Worked by the Great Western.											
Stamford and Essendine	-	Worked by the Great Northern.											
Stocksbridge	-	2	2	-	-	-	-	-	80,801	28,268	-	8,970	-
Stonehouse Pool Improvement and Railway	-	Worked by the London and South-Western.											
Sutton and Willoughby	-	Worked by the Great Northern.											
Taff Vale (Including the "Aberdare," "Cardiff," "Penarth, Cadoxton-juxta-Barry Junction" to the 30th June,* "Cowbridge" to the 30th June,* "Dare Valley" to the 30th June,* "Llantrissant and Taff Vale Junction" to the 30th June,* "Penarth Extension," "Penarth Harbour, Dock, and Railway," "Rhondda Valley and Hirwain Junction" to the 30th June,* and "Trefeig Valley" to the 30th June*.)	-	68	45	113	58,653	231,640	3,475,651	16,594	11,063,921	578,890	359,875	1,654,614	2,01
Talylyn for the year ended 30th September 1889	-	7	7	-	337	24,254	24,591	-	5,433	396	Mixed.	-	1
Teign Valley	-	Worked by the Great Western.											

* Amalgamated with the Taff Vale from 1st July.

† Including 6,300 miles run by mixed trains.

‡ Equivalent number of annual tickets.

RECEIPTS (GROSS) FROM PASSENGER TRAFFIC.								RECEIPTS (GROSS) FROM GOODS TRAFFIC.				MISCELLANEOUS, RENTS, TOLLS, NAVIGATION, STEAMBOATS, &c.	TOTAL RECEIPTS FROM ALL SOURCES OF TRAFFIC.	NAME OF COMPANY.
RECEIPTS FROM PASSENGERS.					Excess Luggage, Parcels, Carriages, Horses, Dogs, &c.	Mails.	TOTAL Receipts from Passenger Traffic.	Merchandise.	Live Stock.	Minerals.	TOTAL Receipts from Goods Traffic.			
1st Class.	2d Class.	3d Class (including Parliamentary).	Holders of Season or Periodical Tickets.	TOTAL from Passengers.										
£	£	£	£	£	£	£	£	£	£	£	£	£	£	
36	1,806	10,285	122	12,749	2,160	550	15,459	5,303	415	4,249	9,967	568	25,994	Pembroke and Tenby.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	<i>Penarth Extension.</i>
-	-	-	-	-	-	-	-	-	-	464	464	334	798	<i>Penarth Harbour, Dock, and Railway.</i>
-	-	-	-	-	-	-	-	-	-	-	-	-	-	Plymouth and Dartmoor.
-	-	-	-	-	-	-	-	86	-	294	380	-	380	Pontypridd, Caerphilly, and Newport.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	Portmadoc, Croesor, and Beddgelert.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	Potteries, Shrewsbury and North Wales.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	<i>Princetown</i>
-	-	-	-	-	-	-	-	-	-	-	-	-	-	<i>Ramsey and Somersham Junction.</i>
22	-	588	15	623	46	23	694	130	5	91	226	-	920	Ravenglass and Eskdale.
-	-	-	-	-	-	-	-	321	-	3,274	3,595	351	3,946	Redruth and Chasewater.
20	47	2,795	28	2,800	35	-	2,925	6,035	-	4,569	10,604	197	13,726	Rhondda and Swansea Bay.
76	1,376	16,949	880	19,781	2,584	95	22,460	19,787	111	141,610	161,508	2,211	186,179	Rhymney.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	<i>Ross and Ledbury.</i>
-	-	-	-	-	-	-	-	-	-	-	-	-	-	<i>Ross and Monmouth.</i>
-	-	-	-	-	-	-	-	73	-	3,378	3,451	-	3,451	Rowrah and Kelton Fell Mineral.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	<i>Royston and Hitchin.</i>
-	-	-	-	-	-	-	-	-	-	2,603	2,606	-	2,606	St. Austell and Pentewan Railway, Harbour, and Dock.
-	-	-	-	-	-	-	-	-	-	-	-	174	745	<i>Salisbury Railway and Market House.</i>
-	-	-	-	-	-	-	-	-	-	571	571	-	-	Saundersfoot Railway and Harbour.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	<i>Scarborough and Whitby.</i>
90	3,443	16,062	2,646	23,550	445	36	24,031	380	-	362	742	714	25,487	Seacombe, Hoylake, and Deeside.
85	-	4,120	81	4,336	406	65	4,897	4,044	52	31,861	35,957	3,605	44,459	Severn and Wye and Severn Bridge.
43	1,244	35,090	3,788	42,165	5,735	94	47,994	46,204	795	27,954	74,953	2,245	125,192	Sheffield and Midland Committee.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	<i>Shrewsbury and Hereford.</i>
-	-	-	-	-	-	-	-	-	-	-	-	-	-	<i>Shropshire Union Railways and Canal.</i>
-	-	-	-	-	-	-	-	-	-	-	-	-	-	<i>Sidmouth.</i>
-	-	-	-	-	-	-	-	25	-	525	550	-	550	Snailbeach District.
13	2,583	45,833	875	54,354	7,738	1,000	63,092	47,208	5,932	40,681	91,821	2,304	157,217	Somerset and Dorset.
96	214,340	759,619	153,922	1,347,977	142,149	24,742	1,514,868	333,581	13,131	157,871	504,583	241,988	1,261,439	South-Eastern.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	<i>Southport and Cheshire Lines Extension.</i>
-	-	-	-	-	-	-	-	579	-	9,398	9,972	193	10,165	South Wales Mineral.
47	-	1,633	39	1,919	248	52	2,219	619	-	444	1,063	109	3,891	Southwold.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	<i>Spilsby and Firsby.</i>
-	-	-	-	-	-	-	-	-	-	-	-	-	-	<i>Staines and West Drayton.</i>
-	-	-	-	-	-	-	-	-	-	-	-	-	-	<i>Stamford and Essendine.</i>
-	-	-	-	-	-	-	-	1,435	-	1,738	3,173	114	3,287	Stocksbridge.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	<i>Stonehouse Pool Improvement and Railway.</i>
-	-	-	-	-	-	-	-	-	-	-	-	-	-	<i>Sutton and Willcoughby.</i>
58	8,572	82,980	6,221	100,831	6,931	3,000	110,862	65,570	943	558,334	624,847	108,122	843,881	Taff Vale.
-	16	456	-	472	15	10	497	123	-	519	642	20	1,159	Talylyn.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	<i>Teign Valley.</i>

Exclusive of 13,429¹/₂ received from the London, Brighton, and South Coast Railway Company in respect of the greater use made by that Company of the lines between London and Redhill.

NAME OF COMPANY.	LENGTH OF LINE IN MILES open on 31st December 1889.			PASSENGER TRAFFIC.					GOODS TRAFFIC.		NUMBER OF MILES TRAVELLED BY TRAINS.								
				NUMBER OF PASSENGERS CONVEYED (exclusive of Season and Periodical Tickets).				Holders of Season or Perio- dical Tickets.	Minerals.	General Merchandise.	Passenger Trains.	Goods and Mineral Trains.	TOTAL.						
	Double or more.	Single.	TOTAL.	1st Class.	2d Class.	3d Class (including Parliamentary).	TOTAL.												
Tenbury	Worked by the Great Western and London and North-Western.														Tons.	Tons.			
Thetford and Watton	Worked by the Great Eastern.																		
Tiverton and North Devon	Worked by the Great Western.																		
Tottenham and Hampstead Junction	Worked by the Great Eastern and Midland.																		
Vale of Llangollen	Worked by the Great Western.																		
Van		7	7							10,780	2,157		7,972	7,972					
Victoria Station and Pimlico	Line used by the Great Western, London and North-Western, London, Brighton, and South Coast, and London,																		
Wainfleet and Presby	Worked by the Great Northern.																		
Watton and Swaffham	Worked by the Great Eastern.																		
Wellington and Severn Junction	Leased to the Great Western.																		
Wenlock	Worked by the Great Western.																		
West Cornwall Railway	See under Great Western.																		
West Lancashire (Including "Liverpool, Southport, and Preston Junction")	24	1	25	4,260	7,802	682,505	694,067	4,011	38,020	41,125	250,737	141,093	391,830						
West London	Leased to the West London Extension.																		
West London Extension	Line worked by the Great Western, London and North-Western, London and South-Western, and London, Brighton,																		
West Riding and Grimsby	Included in the returns of the Great Northern and Manchester, Sheffield, and Lincolnshire.																		
West Somerset	Leased to the Great Western.																		
West Somerset Mineral		12*	12*	34	188	8,903	9,125		1,513	1,456	7,476	1,024	8,500						
Weymouth and Portland	Worked by the Great Western and London and South-Western.																		
Whitland and Cardigan	Worked by the Great Western.																		
Wigan Junction	Worked by the Manchester, Sheffield, and Lincolnshire.																		
Wirral	Worked by the Seacombe, Hoylake, and Deeside.																		
Witney	Worked by the Great Western.																		
Wivenhoe and Brightlingsea	Worked by the Great Eastern.																		
Woodside and South Croydon Joint Committee	Included in the returns of the London, Brighton and South Coast, and South Eastern.																		
Wrexham, Mold, and Connah's Quay (Including the "Buckley.")	10	8	18	1,796	5,210	274,791	281,797		994,540	67,378		117,976	156,848†						
Wye Valley	Worked by the Great Western.																		
TOTAL ENGLAND AND WALES	9,011	5,023	14,034	24,300,309	57,159,343	401,503,922	683,263,574	1,158,234	179,000,061	72,470,373	135,523,228	117,796,137	253,826,186†						
										11,984									

* Of this length 5 miles are open for goods and mineral traffic only.

† Including 38,372 miles run by mixed trains.

TABLE NO. 2A.

The following Companies have, in addition, given the Number of Miles of Single, Double, Treble, and Quadruple or more Lines of Rails belonging to or worked by them.

NAME OF COMPANY.	LENGTH OF LINE IN MILES OPEN ON 31ST DECEMBER 1889.				
	Single Lines.	Double Lines.	Three Lines.	Four Lines or more.	TOTAL.
ENGLAND AND WALES.					
CHESHIRE LINES COMMITTEE	18	112	2	3	135
GREAT EASTERN	513	577	3	7	1,100
GREAT NORTHERN	290	549	36	34	819
GREAT WESTERN	1,312	1,142	—	23	2,477
LONDON AND NORTH-WESTERN	397	1,303	30	140	1,876
LONDON AND SOUTH-WESTERN	230	553	14	17	814
LONDON, BRIGHTON, AND SOUTH COAST	133	284	1	10	435
LONDON, CHATHAM, AND DOVER	11	165	1	7	184
MANCHESTER, SHEFFIELD, AND LINCOLNSHIRE	19	276	6	13	314
MIDLAND	336	928	29	82	1,375
NORTH LONDON	—	7	—	5	12
SOUTH-EASTERN	44	341	4	4	393
TAFF VALE	45	45	11	12	113

RECEIPTS (GROSS) FROM PASSENGER TRAFFIC.								RECEIPTS (GROSS) FROM GOODS TRAFFIC.				Miscellaneous, Rents, Tolls, Navigation, Steamboats, &c.	TOTAL RECEIPTS FROM ALL SOURCES OF TRAFFIC.	NAME OF COMPANY.
RECEIPTS FROM PASSENGERS.					Excess Luggage, Parcels Carriages, Horses, Dogs, &c.	Mails.	TOTAL Receipts from Passenger Traffic.	Merchandise.	Live Stock.	Minerals.	TOTAL Receipts from Goods Traffic.			
1st Class.	2d Class.	3rd Class (including Parliamentary).	Holders of Season or Periodical Tickets.	TOTAL from Passengers.										
£	£	£	£	£	£	£	£	£	£	£	£	£	£	
														Tenbury.
														Thetford and Walton.
														Twerton and North Devon.
														Tottenham and Hampstead Junction.
														Vale of Llangollen.
								519		874	893	13	908	Van.
Chatham, and Dover.														Victoria Station and District.
														Wainfleet and Firsby.
														Watton and Swaffham.
														Wellington and Severn Junction.
														Wenlock.
														West Cornwall Railway.
465	350	11,551	829	13,195	1,745	50	14,990	5,602	294	3,244	9,140	1,063	25,193	West Lancashire.
and South Coast.														West London.
														West London Extension.
														West Riding and Grimsby.
														West Somerset.
1	5	122	-	128	15	-	143	188	-	120	308	6,443	6,894	West Somerset Mineral.
														Weymouth and Portland.
														Whitland and Cardigan.
														Wigan Junction.
														Wirral.
														Witney.
														Wivenhoe and Brightlingsea.
														Woodside and South Croydon Joint Committee.
70	124	4,211	-	4,411	336	-	4,747	8,648	104	34,616	43,368	393	48,508	Wrexham, Mold, and Connah's Quay.
														Wyo Valley.
2,635,937	2,339,082	16,998,719	1,942,850	23,917,187	8,288,046	568,278	27,774,281	19,215,728	879,492	14,791,828	31,917,533	2,984,152	65,675,960	TOTAL ENGLAND AND WALES.

† Including 506,821 miles run by mixed trains.

No. 2.—Traffic, &c.

THE FINANCIAL YEAR OF THE SCOTCH RAILWAY COMPANIES

NAME OF COMPANY.	LENGTH OF LINE IN MILES open on 31st January 1890.			PASSENGER TRAFFIC.				Holders of Season or Perio- dical Tickets.	GOODS TRAFFIC.		NUMBER OF MILES TRAVELLED BY TRAINS.		
	Double or more.	Single.	TOTAL.	NUMBER OF PASSENGERS CONVEYED (exclusive of Season and Periodical Tickets).					Minerals.	General Merchandise.	Passenger Trains.	Goods and Mineral Trains.	TOTAL.
				1st Class.	2d Class.	3d Class (including Parliamentary).	TOTAL.						
<i>Anstruther and St. Andrew's</i> - - -	<i>Worked by the North British.</i>								<i>Tons.</i>	<i>Tons.</i>			
<i>Arbroath and Forfar</i> - - - - -	<i>Leased to the Caledonian.</i>												
<i>Ayr and Maybole</i> - - - - -	<i>Leased to the Glasgow and South-Western.</i>												
Ayrshire and Wigtownshire - - - - -	-	31	31	4,767	-	80,579	85,340	35	15,893	23,137	94,152	47,975	142,127
<i>Blane Valley</i> - - - - -	<i>Worked by the North British.</i>												
Caledonian - - - - - (Including the "Arbroath and Forfar," "Callander and Oban," "Cathcart District," "Dundee and New- tyle," "Greenock and Wemyss Bay," "Killin," "Kilsyth and Bonnybridge," "Lanarkshire and Ayrshire," "Mor- fay" to the 10th November; "Solway Junction," and half the "Glasgow and Kilmarnock" and "Glasgow and Paisley" joint lines.)	493	378	871	1,436,756	684,207	20,246,969	22,367,932	14,288*	12,951,200	3,827,531	6,464,857	6,465,332†	12,930,189
<i>Callander and Oban</i> - - - - -	<i>Worked by the Caledonian.</i>												
<i>Cathcart District</i> - - - - -	<i>Worked by the Caledonian.</i>												
City of Glasgow Union - - - - -	6	1	7	426,485	8,732§	5,214,774	5,649,991	7,418	1,139,655	543,669	-	-	-
<i>Dundee and Newtyle</i> - - - - -	<i>Leased to the Caledonian.</i>												
<i>Edinburgh and Bathgate</i> - - - - -	<i>Leased to the North British.</i>												
Findhorn - - - - -	<i>Line closed since 30th January 1869.</i>												
<i>Forth and Clyde Junction</i> - - - - -	<i>Leased to the North British.</i>												
Glasgow and South-Western - - - - - (Including the "Ayr and Maybole," "Kilmarnock and Troon," and half the "Glasgow and Kilmarnock" and "Glasgow and Paisley" joint lines.)	265	82	347	582,216	9,927	10,084,308	10,676,451	4,561*	4,262,746	1,212,532	2,774,207	2,556,170	5,330,377
<i>Glasgow, Yoker, and Clydebank</i> - - - - -	<i>Worked by the North British.</i>												
Great North of Scotland - - - - - (Including the Buckle Extension.)	33	283	316	132,650	-	2,489,629	2,572,279	2,123	323,152	397,274	1,130,485	619,124	1,749,609
<i>Greenock and Wemyss Bay</i> - - - - -	<i>Worked by the Caledonian.</i>												
Highland, for the year ended 28th February 1890 -	10	408	418	101,325	39,984	1,343,373	1,484,682	2,599	126,872	251,965	Mixed.		1,714,552
<i>Killin</i> - - - - -	<i>Worked by the Caledonian.</i>												
<i>Kilmarnock and Troon</i> - - - - -	<i>Leased to the Glasgow and South-Western.</i>												
<i>Kilsyth and Bonnybridge</i> - - - - -	<i>Worked by the Caledonian.</i>												
<i>Lanarkshire and Ayrshire</i> - - - - -	<i>Worked by the Caledonian.</i>												
<i>Newport</i> - - - - -	<i>Leased to the North British.</i>												
North British - - - - - (Including the "Anstruther and St. Andrew's," "Blane Valley," "Edinburgh and Bathgate," "Forth and Clyde Junction," "Glasgow, Yoker, and Clydebank," "New- port," and "Strathendrick and Aberfoyle.")	432	614	1,046	1,675,080	90,220	25,900,189	27,665,489	55,960	11,710,852	3,924,568	6,469,790	7,250,808	13,720,598
Portpatrick and Wigtownshire Joint Committee -	-	82	82	20,576	1,570	383,148	405,294	103	66,139	55,793	220,295	128,965	349,260
<i>Solway Junction</i> - - - - -	<i>Leased to the Caledonian.</i>												
<i>Strathendrick and Aberfoyle</i> - - - - -	<i>Worked by the North British.</i>												
TOTAL SCOTLAND - - - - -	1,239	1,879	3,118	4,379,855	834,640	65,692,969	70,907,464	87,087	30,626,514	10,236,519	17,153,786	17,068,374	35,936,712

* Equivalent number of annual tickets.

† Including 2,462,375 miles run by mineral trains.

‡ Amalgamated with the Caledonian from the 11th November.

§ Equivalent number of annual tickets.

SCOTLAND, in 1889.

EXCEPT WHEN OTHERWISE STATED, ENDED ON THE 31ST JANUARY 1890.

RECEIPTS (GROSS) FROM PASSENGER TRAFFIC.								RECEIPTS (GROSS) FROM GOODS TRAFFIC.				MISCELLANEOUS, RENTS, TOLLS, NAVIGATION, STEAMBOATS, &c.	TOTAL RECEIPTS FROM ALL SOURCES OF TRAFFIC.	NAME OF COMPANY.	
RECEIPTS FROM PASSENGERS.					Excess Luggage, Parcels, Carriages, Horses, Dogs, &c.	Mails.	TOTAL Receipts from Passenger Traffic.	Merchandise.	Live Stock.	Minerals.	TOTAL Receipts from Goods Traffic.				
1st Class.	2d Class.	3d Class (including Parliamentary).	Holders of Season or Periodical Tickets.	TOTAL from Passengers.											
£	£	£	£	£	£	£	£	£	£	£	£	£	£		
711	-	-	4,460	130	5,301	1,389	25	6,715	2,401	735	1,193	4,329	2,163	13,207	Anstruther and St Andrew's. Arbroath and Forfar. Ayr and Maybole. Ayrshire and Wigtownshire. Blane Valley.
144,473	27,244	637,952	67,669	927,338	150,410	72,155	1,149,942	908,838	73,685	911,304	1,893,887	157,271	3,201,100		Caledonian.
2,089	365	17,770	3,093	23,538	5,079	100	28,767	19,376	653	17,380	37,409	8,992	75,168		Callander and Oban. Cathcart District. City of Glasgow Union. Dundee and Newtyle. Edinburgh and Bathgate. Findhorn. Forth and Clyde Junction.
53,069	374	329,050	30,576	413,069	65,475	14,568	493,112	363,807	22,335	272,057	663,199	30,210	1,186,521		Glasgow and South-Western.
14,981	-	-	111,569	11,974	138,524	17,892	17,575	173,991	115,154	13,058	37,478	165,690	11,520	351,201	Glasgow, Yoker, and Clydebank. Great North of Scotland. Greenock and Wemyss Bay.
83,898	8,072	114,393	5,359	161,722	34,465	55,526	251,713	101,870	23,341	21,520	151,731	5,720	409,164		Highland. Killin. Kilmarnock and Troon. Kilsyth and Bonnybridge.
127,745	10,531	746,552	78,494	963,322	127,198	24,168	1,114,688	938,589	62,998	851,342	1,852,929	56,378	3,023,995		Lanarkshire and Ayrshire. Newport. North British.
2,724	246	14,878	233	18,081	4,759	2,831	25,671	9,417	5,319	4,131	18,867	2,956	47,494		Portpatrick and Wigtownshire Joint Committee. Solway Junction. Strathendrick and Aberfoyle.
380,290	46,503	2,026,624	197,523	2,650,945	406,706	186,948	3,244,599	2,464,452	207,124	2,116,465	4,788,041	275,210	8,307,850		TOTAL SCOTLAND.

§ Second class bookings ceased after April 1889.

|| The Company ceased to carry second class passengers from 1st March 1889.

** Including 1,714,552 miles run by mixed trains.

No. 2.—Traffic, &c.,

NAME OF COMPANY.	LENGTH OF LINE IN MILES open on 31st December 1889.			PASSENGER TRAFFIC.				Holders of Season or Periodical Tickets.	GOODS TRAFFIC.		NUMBER OF MILES TRAVELLED BY TRAINS.		
	Double or more.	Single.	TOTAL.	NUMBER OF PASSENGERS CONVEYED (exclusive of Season and Periodical Tickets).					Minerals.	General Merchandise.	Passenger Trains.	Goods and Mineral Trains.	TOTAL.
				1st Class.	2d Class.	3d Class (including Parliamentary).	TOTAL.						
<i>Athenry and Ennis Junction</i> - - - -	<i>Leased to the Waterford and Limerick.</i>								<i>Tons.</i>	<i>Tons.</i>			
<i>Athenry and Tuam</i> - - - -	<i>Leased to the Waterford and Limerick.</i>												
Ballycastle - - - -	16	16		2,431	6,138	91,034	99,603	45	1,664	6,269	Mixed.		36,530
Belfast and County Down - - - -	7	61	68	181,838	369,721	1,051,704	1,603,263	9,950	96,953	67,221	382,530	66,911	440,441
Belfast and Northern Counties (Including the "Ballymena and Larne" to 20th June,† "Carrickfergus and Larne," "Derry Central," "Draperstown," and "Limavady and Dungiven.")	33	216	249	124,612	306,890	2,074,121	2,505,613	731*	340,869	879,991	775,692	396,603	1,229,707†
<i>Carrickfergus and Larne</i> - - - -	<i>Worked by the Belfast and Northern Counties.</i>												
<i>Clara and Banagher</i> - - - -	<i>Worked by the Great Southern and Western of Ireland.</i>												
<i>Clonakilty Extension</i> - - - -	<i>Worked by the Cork, Bandon, and South Coast.</i>												
Cork and Macroom Direct - - - -	25	25		6,504	19,999	124,220	150,723	26*	6,007	26,230	Mixed.		73,135
Cork, Bandon, and South Coast (Including the "Bantry Extension," "Clonakilty Extension," and "Ilen Valley.")	85	85		11,966	38,218	253,540	305,724	144	11,265	94,151	11,503	246,528	258,031
Cork, Blackrock, and Passage - - - -	6	6		53,900	169,824	311,869	535,613	1,264	-	1,280	67,696	-	67,696
<i>Derry Central</i> - - - -	<i>Worked by the Belfast and Northern Counties.</i>												
<i>Draperstown</i> - - - -	<i>Worked by the Belfast and Northern Counties.</i>												
<i>Dublin and Kingstown</i> - - - -	<i>Leased to the Dublin, Wicklow, and Wexford.</i>												
Dublin, Wicklow, and Wexford (Including the "Dublin and Kingstown.")	28	115	143	371,089	2,004,738	2,419,985	4,825,812	8,686	29,478	132,858	876,947	202,496	1,079,443
Dundalk, Newry, and Greenore - - - -	26	26		2,999	8,003	109,180	120,272	8	-	32,798	49,100	29,009	78,109
<i>Enniskillen, Bundoran, and Sligo</i> - - - -	<i>Worked by the Great Northern of Ireland.</i>												
<i>Fermoy and Lismore</i> - - - -	<i>Worked by the Great Southern and Western of Ireland.</i>												
Finn Valley (Including the "West Donegal.")	31	31		2,109	9,140	67,731	79,070	4	3,439	21,880	Mixed.		69,579
Great Northern of Ireland (Including the Enniskillen, Bundoran, and Sligo, for the year ended 30th September 1889.)	189	383	522	179,137	651,613	3,260,765	4,100,545	2,084	281,034	612,261	2,018,063	987,994	2,961,067
<i>Great Northern and Western of Ireland</i> - - - -	<i>Worked by the Midland Great Western of Ireland.</i>												
Great Southern and Western of Ireland (Including the "Clara and Banagher," and "Fermoy and Lismore.")	204	339	543	170,026	370,539	2,152,991	2,693,556	697	203,602	734,776	1,947,068	1,217,170	3,164,238
<i>Ilen Valley</i> - - - -	<i>Worked by the Cork, Bandon, and South Coast.</i>												
Kanturk and Newmarket - - - -	9	9		643	2,205	35,259	38,197	4	2,551	9,837	Mixed.		19,780
<i>Kilkenny Junction</i> - - - -	<i>Worked by the Waterford and Central Ireland.</i>												
<i>Letterkenny</i> - - - -	<i>Worked by the Londonderry and Lough Swilly.</i>												
<i>Limavady and Dungiven</i> - - - -	<i>Worked by the Belfast and Northern Counties.</i>												
<i>Limerick and Kerry</i> - - - -	<i>Worked by the Waterford and Limerick.</i>												
Listowel and Ballybunion - - - -	9	9		1,809	-	38,881	35,750	169	4,993	913	19,740	-	19,740
Londonderry and Lough Swilly (Including the "Letterkenny.")	31	31		9,910	38,254	230,198	278,362	538	11,164	37,188	Mixed.		92,981

* Equivalent number of annual tickets. † Including 57,472 miles run by mixed trains. ‡ Amalgamated with the Belfast and Northern Counties from 1st July 1889.

IRELAND, in 1889.

RECEIPTS (GROSS) FROM PASSENGER TRAFFIC.								RECEIPTS (GROSS) FROM GOODS TRAFFIC.				MISCELLANEOUS, RENTS, TOLLS, NAVIGATION, STEAMBOATS, &c.	TOTAL RECEIPTS FROM ALL SOURCES OF TRAFFIC.	NAME OF COMPANY.
RECEIPTS FROM PASSENGERS.					Excess Luggage, Parcels, Carriages, Horses, Dogs, &c.	Mails.	TOTAL Receipts from Passenger Traffic.	Merchandise.	Live Stock.	Minerals.	TOTAL Receipts from Goods Traffic.			
1st Class.	2d Class.	3d Class (including Parliamentary).	Holders of Season or Periodical Tickets.	TOTAL from Passengers.										
£	£	£	£	£	£	£	£	£	£	£	£	£	£	
														<i>Athenry and Ennis Junction.</i> <i>Athenry and Tuam.</i>
132	249	2,082	20	2,433	192	300	2,975	1,027	158	124	1,309	25	4,309	Ballycastle.
8,452	12,822	30,588	9,423	61,285	4,241	1,400	66,926	14,945	1,955	6,597	23,497	821	91,244	Belfast and County Down.
11,151	21,253	69,982	5,760	108,146	10,341	8,700	127,187	82,239	5,968	31,895	119,602	2,121	248,910	Belfast and Northern Counties.
														<i>Carrickfergus and Larne.</i> <i>Clara and Banagher.</i> <i>Clonakilty Extension.</i>
488	1,030	4,485	132	6,144	581	61	6,786	5,541	1,463	886	7,890	124	14,800	Cork and Macroom Direct.
2,945	6,034	17,081	423	26,433	2,377	3,020	31,880	30,881	7,108	1,118	38,602	153	70,635	Cork, Bandon, and South Coast.
1,285	3,062	3,623	1,642	9,622	400	40	10,062	251	-	-	251	6,682	16,995	Cork, Blackrock, and Passage.
														<i>Derry Central.</i> <i>Draperstown.</i> <i>Dublin and Kingstown.</i>
20,187	61,541	58,335	23,184	163,247	15,498	12,010	190,755	42,381	7,250	3,336	52,967	4,446	248,168	Dublin, Wicklow, and Wexford.
237	430	2,590	32	3,239	1,198	23	4,510	5,271	857	-	6,128	3,064	13,702	Dundalk, Newry, and Greenore.
														<i>Enniskillen, Bundoran, and Sligo.</i>
														<i>Fermoy and Lismore.</i>
257	759	3,323	16	4,354	515	100	4,969	4,949	1,072	233	6,254	28	11,251	Finn Valley.
36,536	76,541	181,522	6,943	301,542	36,141	38,661	376,344	240,594	38,818	40,569	319,981	9,946	706,271	Great Northern of Ireland.
47,057	74,583	186,641	2,870	311,151	46,592	40,747	398,490	276,687	71,823	31,304	379,814	4,309	782,613	<i>Great Northern and Western of Ireland.</i> Great Southern and Western of Ireland.
														<i>Ilken Valley.</i>
43	75	748	11	877	41	-	918	801	98	117	1,016	47	1,981	Kanturk and Newmarket. <i>Kilkenny Junction.</i>
														<i>Letterkenny.</i> <i>Limavady and Dungiven.</i> <i>Limerick and Kerry.</i>
96	-	988	31	1,115	27	30	1,172	139	1	421	561	-	1,733	Listowel and Ballybunion.
618	1,426	6,250	326	8,620	278	125	9,023	5,139	1,172	576	6,887	135	16,045	Londonderry and Lough Swilly.

NAME OF COMPANY.	LENGTH OF LINE IN MILES open on 31st December 1889.			PASSENGER TRAFFIC.				Holders of Season or Periodical Tickets.	GOODS TRAFFIC.		NUMBER OF MILES TRAVELLED BY TRAINS.		
				NUMBER OF PASSENGERS CONVEYED (exclusive of Season and Periodical Tickets).					Minerals.	General Merchandise.	Passenger Trains.	Goods and Mineral Trains.	TOTAL.
	Double or more	Single.	TOTAL.	1st Class.	2d Class.	3d Class (including Parliamentary).	TOTAL.						
Midland Great Western of Ireland - - - (Including the "Great Northern and Western of Ireland.")	160	272	432	82,703	129,606	861,605	1,073,914	283	Tons. 50,818	Tons. 352,123	1,325,915	746,594	2,072,509
Rathkeale and Newcastle Junction - - -	Worked by the Waterford and Limerick.												
Sligo, Leitrim, and Northern Counties - - -	-	43	43	2,891	9,017	116,860	128,268	18	12,744	25,490	Mixed.		100,688
Southern - - - - -	Worked by the Waterford and Limerick.												
Tralee and Fenit - - - - -	Worked by the Waterford and Limerick.												
Waterford and Central Ireland, for the year ended 29th September 1889. (Including the "Central Ireland" for the year ended 20th September 1889, and the "Kilkenny Junction" for the year ended 1st November 1889.)	-	67	67	7,624	35,708	148,385	191,717	695	19,435	74,422	145,343	46,890	192,233
Waterford and Limerick - - - - - (Including the "Athenry and Ennis Junction," "Athenry and Tuam," "Limerick and Kerry," "Rath- keale and Newcastle Junction," "Southern," and "Tralee and Fenit.")	32	247	279	44,366	134,697	1,020,217	1,199,280	198*	59,968	303,914	725,667	185,557	911,224
Waterford and Tramore - - - - -	-	7	7	68,246	-	108,537	176,783	58	1,800	1,700	42,630	400	43,120
Waterford and Wexford† - - - - -	-	9	9	1,053	-	5,544	6,597	111	840	2,639	Mixed.		4,248
Waterford, Dungarvan and Lismore - - -	-	43	43	2,926	13,143	102,114	118,183	17	3,287	21,208	Mixed.		86,780
West Donegal - - - - -	Worked by the Finn Valley.												
TOTAL IRELAND - - - - -	603	2,040	2,643	1,328,432	4,317,653	14,620,760	20,266,845	25,730	1,150,411	2,959,149	8,392,894	4,076,242	13,000,279†

* Equivalent number of annual tickets.

† This line was almost entirely closed for traffic after the 17th May.

‡ Including 541,143 miles run by mixed trains.

LIGHT RAILWAYS AUTHORISED UNDER THE

Bessbrook and Newry Tramway	-	-	-	-	3	3	4,335	76,291	-	-	80,626	26	10,318	6,737	Mixed.	20,424
Carrickfergus Harbour Junction	-	-	-	-	1	1	-	-	-	-	-	-	6,481	-	-	480
Cavan, Leitrim, and Roscommon for the year ended 31st October 1889.	-	-	-	-	48	48	4,974	-	-	99,253	104,227	-	4,117	12,388	Mixed.	93,928
Clogher Valley Tramway for the year ended 30th September 1889.‡	-	-	-	-	37	37	7,445	-	-	109,447	116,892	3	5,442	10,943	Mixed.	91,354
Cork and Muskerry	-	-	-	-	18	18	41,497	-	-	287,205	328,702	125	2,614	4,468	Mixed.	68,940
West Carbery	-	-	-	-	14	14	1,148	-	-	24,810	25,958	-	-	-	2,802	22,907
West Clare for the year ended 31st October 1889	-	-	-	-	27	27	6,815	-	-	81,970	88,785	7	-	-	8,483	Mixed.
TOTAL, LIGHT RAILWAYS	-	-	-	-	148	148	66,214	76,291	602,635	745,190		161	28,972	45,811	22,967	480
GRAND TOTAL, IRELAND	-	-	-	-	603	2,188	2,791	1,394,646	4,393,944	15,223,445	21,012,035	25,891	1,179,383	2,984,960	3,405,861	4,076,722

* Including 330,329 miles run by mixed trains.

† Including 871,472 miles run by mixed trains.

TABLE No. 2A.

The following Company has, in addition, given the Number of Miles of Single, Double, Treble, and Quadruple or more Lines of Rails belonging to or worked by it.

NAME OF COMPANY.	LENGTH OF LINE IN MILES ON 31ST DECEMBER 1889.				
	Single Lines.	Double Lines.	Three Lines.	Four Lines or more.	TOTAL.
IRELAND.					
DUBLIN, WICKLOW, AND WEXFORD - - -	115	27	1	-	143

RECEIPTS (GROSS) FROM PASSENGER TRAFFIC.								RECEIPTS (GROSS) FROM GOODS TRAFFIC.				MISCELLANEOUS, RENTS, TOLLS, NAVIGATION, STEAMBOATS, &c.	TOTAL RECEIPTS FROM ALL SOURCES OF TRAFFIC.	NAME OF COMPANY.
RECEIPTS FROM PASSENGERS.					Excess Luggage, Parcels, Carriages, Horses, Dogs, &c.	Mails.	TOTAL Receipts from Passenger Traffic.	Merchandise.	Live Stock.	Minerals.	TOTAL Receipts from Goods Traffic.			
1st Class.	2d Class.	3d Class (including Parliamentary).	Holders of Season or Periodical Tickets.	TOTAL from Passengers.										
£	£	£	£	£	£	£	£	£	£	£	£	£	£	
27,390	35,738	103,901	1,664	168,693	27,384	29,071	225,128	173,357	71,599	9,038	253,994	11,535	490,657	Midland Great Western of Ireland.
														<i>Rathkeale and Newcastle Junction.</i>
471	1,005	5,369	39	6,884	488	300	7,072	3,828	2,135	1,919	7,882	35	15,589	Sligo, Leitrim, and Northern Counties. <i>Southern.</i>
														<i>Tralee and Fenit.</i>
1,003	4,775	8,070	793	16,141	1,585	1,250	18,976	13,899	6,856	3,442	24,197	182	43,355	Waterford and Central Ireland.
6,748	14,802	50,379	1,359	73,288	9,979	10,425	93,692	69,606	30,003	10,706	109,315	4,402	207,409	Waterford and Limerick.
2,310	-	2,338	521	5,169	225	30	5,424	217	15	90	322	71	5,817	Waterford and Tramore.
37	-	141	17	195	8	-	203	186	5	32	173	35	411	Waterford and Wexford.
536	1,532	5,421	132	7,621	982	190	8,793	5,566	2,248	291	8,105	146	17,044	Waterford, Dungarvan, and Lismore. <i>West Donegal.</i>
108,559	317,655	744,757	55,338	1,286,349	159,053	146,483	1,591,885	975,954	250,604	142,139	1,368,747	48,307	3,008,939	TOTAL IRELAND.

TRAMWAYS (IRELAND) ACTS, 1860 to 1881.

52	584	-	-	17	653	15	-	-	668	263	-	-	361	624	62	1,354	Bessbrook and Newry Tramway.
-	-	-	-	-	-	-	-	-	-	-	-	-	74	74	6	80	Carrickfergus Harbour Junction.
415	-	-	2,901	-	3,316	300	-	-	3,616	1,873	903	355	3,131	20	6,767	Cavan, Leitrim, and Roscommon.	
379	-	-	2,670	9	3,058	229	90	-	3,377	2,043	147	708	2,898	68	6,343	Clogher Valley Tramway.	
1,074	-	-	4,884	221	6,179	213	-	-	6,392	606	165	187	958	90	7,440	Cork and Muskerry.	
101	-	-	915	-	1,016	44	-	-	1,060	1,144	224	-	1,368	-	2,428	West Carbery.	
690	-	-	3,975	5	4,670	173	-	-	4,843	2,300	659	-	2,959	45	7,847	West Clare.	
2,711	584	15,345	252	18,892	974	90	19,956	8,229	2,098	1,685	12,012	291	32,259	TOTAL, LIGHT RAILWAYS.			
171,300	318,249	760,102	55,590	1,305,241	160,027	146,573	1,611,841	934,183	252,702	143,874	1,330,759	48,598	3,041,198	GRAND TOTAL, IRELAND.			

‡ The line was opened for traffic in the early part of 1887; the receipts of the Company up to 30th September in that year were 2,206*l.* and for the twelve months ended 30th September 1888, 5,266*l.*

RAILWAY RETURNS.—1889.

No. 3.—WORKING EXPENDITURE, NET RECEIPTS, AND ROLLING STOCK.

RETURN showing the AMOUNT of the WORKING EXPENDITURE, and of the NET RECEIPTS, &c., and NUMBER of EACH KIND of ROLLING STOCK, for the several RAILWAY COMPANIES, in ENGLAND and WALES, SCOTLAND, and IRELAND for the Year 1889.

No. 3.—Working Expenditure, Net Receipts, and

NAME OF COMPANY.	Length of Line in Miles open on 31st December 1889.	WORKING EXPENDITURE.									
		Maintenance of Way, Works, &c.	Locomotive Power (including Stationary Engines).	Repairs and Renewals of Carriages and Waggon.	Traffic Expenses (Coaching and Merchandise).	General Charges.	Rates and Taxes.	Government Duty.	Compensation for Personal Injuries, &c.	Compensation for Damage and Loss of Goods.	Legal and Parliamentary Expenses.
<i>Abbotsbury</i>	No.	£	£	£	£	£	£	£	£	£	£
<i>Aberdare</i>	<i>Worked by the Great Western.</i>										
<i>Abingdon</i>	<i>Leased to the Taff Vale.</i>										
<i>Abingdon</i>	<i>Leased to the Great Western.</i>										
Alexandra (Newport and South Wales) Docks and Railway.	3	2,089	8,081	558	4,105	11,245	5,963	-	-	-	3,267
Aylesbury and Buckingham	12	1,019	1,336		287	479	34	36	-	2	-
<i>Bala and Festiniog</i>	<i>Worked by the Great Western.</i>										
<i>Banbury and Cheltenham Direct</i>	<i>Worked by the Great Western.</i>										
<i>Barnoldswick</i>	<i>Worked by the Midland.</i>										
Barry Dock and Railway	27	262	5,803	211	5,250	3,091	1,955	78	-	20	5
<i>Birkenhead</i>	<i>Vested jointly in the Great Western and the London and North-Western.</i>										
Bishop's Castle	10	638	568	6	498	502	37	47	-	-	102
<i>Brading Harbour Improvement and Railway</i>	<i>Worked by the Isle of Wight.</i>										
Brecon and Merthyr Tydfil Junction	59	11,576	18,972	4,763	12,149	3,558	1,789	69	40	134	408
<i>Bridport</i>	<i>Leased to the Great Western.</i>										
<i>Brighton and Dyke</i>	<i>Worked by the London, Brighton, and South Coast.</i>										
Bristol Port Railway and Pier	6	957	905	127	1,365	664	131	49	-	-	-
<i>Buckfastleigh, Totnes, and South Devon</i>	<i>Worked by the Great Western.</i>										
<i>Buckley</i>	<i>Worked by the Wrexham, Mold, and Connah's Quay.</i>										
Burry Port and Gwendreath Valley	20	1,795	970	295	854	792	241	-	-	-	128
<i>Calne</i>	<i>Worked by the Great Western.</i>										
Cambrian (Including the Mid Wales and the Llanyblodwell Branch of the Potteries, Shrewsbury, and North Wales.)	232	31,151	35,540	10,050	30,837	8,198	3,702	692	705	410	729
Cannock Chase and Wolverhampton	6	1,002	-		414	413	-	-	-	-	-
Central Wales and Carmarthen Junction	18	2,223	1,617		1,569	1,099	186	46	-	-	14
<i>Charnwood Forest</i>	<i>Worked by the London and North-Western.</i>										
Cheshire Lines Committee (Including "Southport and Cheshire Lines Extension.")	135	78,450	185,682	33,059	180,521	24,830	17,260	1,925	5,689	1,927	3,116
Cleator and Workington Junction	29	4,310	18,418		4,897	1,650	695	9	-	9	-
Cockermouth, Keswick, and Penrith	32	6,191	16,712		3,491	1,527	609	120	-	63	24
<i>Colchester, Stour Valley, Sudbury, and Halstead</i>	<i>Leased to the Great Eastern.</i>										
Colne Valley and Halstead	19	1,255	2,302	468	2,769	1,383	282	28	-	32	60
<i>Cornwall Minerals</i>	<i>Worked by the Great Western.</i>										
Corris	11	533	311	287	1,148	199	64	14	-	-	-
<i>Corwen and Bala</i>	<i>Leased to the Great Western.</i>										
<i>Devon and Somerset</i>	<i>Worked by the Great Western.</i>										
<i>Didcot, Newbury, and Southampton</i>	<i>Worked by the Great Western.</i>										
Dover and Deal Committee	9	1,772	3,233		1,726	781	182	61	-	-	63
Dowlais (Including the "Dowlais Extension.")	2	No public traffic.									
<i>Downham and Stoke Ferry</i>	<i>Leased to the Great Eastern.</i>										

* Exclusive of the working expenses of the Aylesbury Joint Station, not yet ascertained.

† The Company hire nearly all the rolling stock.

Rolling Stock, ENGLAND AND WALES, in 1889.

ROLLING STOCK on 31st December 1889.													NAME OF COMPANY.		
Steamboat, Canal, and Harbour Expenses.	Miscellaneous Working Expendi- ture not included in the fore- going.	TOTAL WORKING EXPENDITURE.	TOTAL RECEIPTS as given in the TRAFFIC RETURN, No. 2.	NET RECEIPTS.	Proportion per Cent. of Expenditure to Receipts.	CARRIAGES, WAGGONS, TRUCKS, &c.									
						Locomotives.	Carriages used for the Con- veyance of Passengers only.	Other Vehicles attached to Passenger Trains.	Waggons of all kinds used for the Conveyance of Live Stock, Minerals, or General Merchandise.	Any other Carriages or Waggons used on the Railway not included in the preceding Columns.	Total Number of Vehicles of all descriptions for Conveyance of Passengers, Live Stock, Ballast, &c.				
£	£	£	£	£		No.	No.	No.	No.	No.	No.				
-	-	40,680	81,988	164,250	82,262	50	22	-	-	-	-	443	443	Abbotsbury.	
-	-	126	3,322*	3,339	17	99	†	-	-	-	-	5	-	5†	Aberdare.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Abingdon.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Alexandra (Newport and South Wales) Docks and Railway.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Aylesbury and Buckingham.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Bala and Festiniog.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Banbury and Cheltenham Direct.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Barnoldswick.
13,144	773	30,592	86,078	55,486	36	26	16	4	60	168	246	246	246	246	Barry Dock and Railway.
-	-	840†	3,238	3,612	374	90	2	6	-	19	1	26	26	26	Birkenhead.
-	-	1,765	55,223	92,653	37,430	60	31	40	3	536	21	600	600	600	Brading Harbour Improvement and Railway.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Brecon and Merthyr Tydfil Junction.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Bridport.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Brighton and Dyke.
-	-	-	4,288	6,260	1,972	68	2	16	3	4	-	23	23	23	Bristol Port Railway and Pier.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Buckfastleigh, Totnes, and South Devon.
1,442	-	-	6,517	9,272	2,755	70	5	-	-	-	53	-	53	53	Buckley.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Bury Port and Gwendreath Valley.
-	-	900	122,923	230,711	107,788	53	57	149	50	1,880	13	2,092	2,092	2,092	Calne.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Cambrian.
-	-	-	1,829	4,440	2,611	11	-	-	-	-	510	-	510	510	Cannock Chase and Wolverhampton.
-	-	331	7,085	8,915	1,830	79	-	-	-	-	-	-	-	-	Central Wales and Carmarthen Junc- tion.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Charnwood Forest.
-	-	40,448	572,907	748,321	175,414	77	-	298	68	2,172	-	2,538	2,538	2,538	Cheshire Lines Committee.
-	-	921	30,900	53,415	22,506	58	4	-	-	-	200	16	216	216	Cleator and Workington Junction.
-	-	112	28,849	50,123	21,274	58	Provided by the "London and North-Western" and "North-Eastern" Companies.							Cockermouth, Keswick, and Penrith.	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Colchester, Stour Valley, Sudbury, and Halstead.
-	-	37	8,616	13,253	4,637	65	4	16	1	68	2	87	87	87	Colne Valley and Halstead.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Cornwall Minerals.
-	-	-	2,506	3,068	562	82	3	10	1	16	-	26	26	26	Corris.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Corwen and Bala.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Devon and Somerset.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Didcot, Newbury, and Southampton.
-	100	7,818	7,760	58 Deficiency.	101	Locomotive power and rolling stock provided by the Companies owning the line.							Dover and Deal Committee.		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Dowlais.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Downham and Stoke Ferry.

† Including \$100. for hire of rolling stock.

‡ All traffic is carried in the trains of the "London and North-Western" Company.

NAME OF COMPANY.	Length of Line in Miles open on 31st December 1889.	WORKING EXPENDITURE.									
		Maintenance of Way, Works, &c.	Locomotive Power (including Stationary Engines).	Repairs and Renewals of Carriages and Waggon.	Traffic Expenses (Coaching and Merchandise).	General Charges.	Rates and Taxes.	Government Duty.	Compensation for Personal Injuries, &c.	Compensation for Damage and Loss of Goods.	Legal and Parliamentary Expenses.
East and West Junction (Including the "Evesham, Redditch, and Stratford-upon-Avon Junction.")	No. 41	£ 2,969	£ 4,937	£ 1,487	£ 4,370	£ 2,451	£ 219	£ 57	-	£ 96	£ 254
East Cornwall Mineral (Calstock to Callington)	7	206	557	132	531	556	58	-	-	-	34
Eastern and Midlands: Lynn, Yarmouth, and Norwich Section	See note, page iii.										
East Gloucestershire	Worked by the Great Western.										
East Lincolnshire	Leased to the Great Northern.										
East London (Joint Committee)	7	3,476	-	-	23,969	6,388	715	93	22	-	903
Elham Valley Light	Worked by the South-Eastern.										
Ely and Newmarket	Leased to the Great Eastern.										
Ely and St. Ives	Worked by the Great Eastern.										
Ely Valley	Worked by the Great Western.										
Evesham, Redditch, and Stratford-upon-Avon Junction.	Worked by the East and West Junction.										
Exmouth Docks and Railway†	-	-	-	-	-	-	-	-	-	-	-
Festiniog	14	1,918	2,648	1,642	2,844	1,172	810	194	-	20	18
Forcett	5	569	1,070	-	38	339	50	-	-	-	-
Forest of Dean Central	Worked by the Great Western.										
Freshwater, Yarmouth, and Newport	Worked by the Isle of Wight Central.										
Furness (Including half the "Whitehaven, Cleator and Egremont" Joint Line.)	134	38,616	53,812	33,645	53,615	13,511	12,237	697	63	532	1,039
Garstang and Knot End	7	1,009	610	86	490	264	18	40	-	-	5
Glyn Valley	9	277	173	1	210	248	111	-	-	-	-
Golden Valley	19	702	604	53	502	195	34	28	-	-	-
Gorsedda Junction and Portmadoc	11	6	-	-	-	40	8	-	-	-	-
Great Eastern (Including the "Colchester, Stour Valley, Sudbury, and Halstead," "Downham and Stoke Ferry," "Ely and Newmarket," "Ely and St. Ives," "Hunstanton and West Norfolk," "London and Blackwall," "Mellis and Eye," "Northern and Eastern," "Ramsey and Somersham Junction," "Thetford and Watton," "Watton and Swaffham," "Wrentham and Brighthelm," half the "Great Northern and Great Eastern Joint Line," and part of the "Tottenham and Hampstead Junction.")	1,100	301,667	560,760	159,283	648,786	88,341	117,876	17,888	3,414	8,141	9,997
Great Marlow	3	583	1,090	-	35	636	106	97	-	2	-
Great Northern (Including the "East Lincolnshire," "Holme and Ramsey," "Horncastle," "Louth and East Coast," "Muswell Hill and Palace Railway," "Nottingham and Grantham," "Nottingham Suburban," "Royston and Hitchin," "Spilby and Firsby," "Stamford and Easington," "Sutton and Willoughby," "Wainfleet and Firsby," and "Skegness Extension," and part of the "Great Northern and Great Eastern Joint Line," and "West Riding and Grimsby.")	819	376,717	639,457	185,744	727,933	101,602	115,423	15,371	3,293	9,213	11,236
Great North of England, Clarence, and Hartlepool Junction.	Leased to the North-Eastern.										
Great Western (Including the "Abbotsbury," "Avington," "Alderley Joint Line," "Bala and Festiniog," "Banbury and Cheltenham Direct," "Bridport," "Buckfastleigh, Totnes, and South Devon," "Calne," "Cornwall" to the 30th June,** "Cornwall Minerals," "Corwen and Bala," "Devon and Somerset," "Didcot, Newbury, and Southampton," "East Gloucestershire," "Ely Valley," "Forest of Dean Central," "Helston," "Kington and Eardisley," "Leominster and Kington," "Llanelli Railway and Dock," to the 30th June,** "Llangollen and Corwen," "Marlborough," "Milford," "Minchess," "Much Wenlock and Severn Junction," "Nantwich and Market Drayton," "Newent," "Oldbury," "Princetown," "Ross and Ledbury," "Ross and Monmouth," "Staines and West Drayton," "Taig Valley," "Tiverton and North Devon," "Vale of Llangollen," "Wellington and Severn Junction," "Wenlock" and "Wenlock Extensions," "West Cornwall Railway," "West Somerset," "Whitland and Cardigan," "Witley," and "Wye Valley," and jointly with other Companies the "Birkenhead," "Clifton Extension," "Halesowen," "Hammersmith and City," "Ludlow and Cleve Hill," "Shrewsbury and Hereford," "Shrewsbury and Wellington," "Shrewsbury and Welshpool," "Tenbury," "Vale of Towy," "Victoria Station and Pimlico," "West London," "Weymouth and Portland," and "Wrexham and Miners Extension.")	2,477	876,816	1,091,423	370,330	1,196,506	158,523	225,411	£6,386	2,975	25,740	28,396

* Including hire of carriages and waggons.

† The Railway is merely a branch line from the docks to the London and South-Western Railway.

‡ And one stationary engine.

			ROLLING STOCK on 31st December 1889.										NAME OF COMPANY.
Steamboat, Canal, and Harbour Expenses.	Miscellaneous Working Expenditure not included in the foregoing.	TOTAL WORKING EXPENDITURE.	TOTAL RECEIPTS, as given in the TRAFFIC RETURN, No. 2.	NET RECEIPTS.	Proportion per Cent. of Expenditure to Receipts.	Locomotives.	CARRIAGES, WAGGONS, TRUCKS, &c.						
							Carriages used for the Conveyance of Passengers only.	Other Vehicles attached to Passenger Trains.	Waggons of all kinds used for the Conveyance of Live Stock, Minerals or General Merchandise.	Any other Carriages or Waggons used on the Railway, not included in the preceding Columns.	Total Number of Vehicles of all descriptions for Conveyance of Passengers, Live Stock, Ballast, &c.		
£	£	£	£	£		No.	No.	No.	No.	No.	No.		
-	1,259	18,000	16,025	2,074 Deficiency.	113	7	15	3	42	5	65	East and West Junction.	
-	-	2,074	3,316	1,242	63	2†	-	-	148	-	148	East Cornwall Mineral (Calstock to Callington). Eastern and Midlands : Lynn, Yarmouth, & Norwich Sect. <i>East Gloucestershire.</i> <i>East Lincolnshire.</i>	
-	1,180	36,511	46,051	9,240	-	The traffic is carried in the trains of the Companies using the Line.						East London. <i>Eltham Valley Light.</i> <i>Ely and Newmarket.</i> <i>Ely and St. Ives.</i> <i>Ely Valley.</i> <i>Evesham, Redditch, and Stratford-upon-Avon Junction.</i> Exmouth Docks and Railway.	
-	-	-	-	-	-	-	-	-	-	-	-	-	
-	50	11,516	18,044	6,728	63	9	54	5	1,162	1	1,222	Festiniog.	
-	-	2,066	4,772	2,706	43	Supplied by the "North-Eastern" Company.						Forecett. <i>Forest of Dean Contract.</i> <i>Freshwater, Yarmouth, and Newport.</i>	
9,967	-	217,734	511,031	293,297	43	119	223	90	7,101	71	7,485	Furness.	
-	230§	2,692	3,257	565	83	2	4	-	25	-	29	Garstang and Knot End.	
-	235	1,255	1,485	230	85	2	3	-	114	21	138	Glyn Valley.	
-	400	2,518	1,795	723 Deficiency.	140	3	6	2	-	12	20	Golden Valley.	
-	54	3	51 Deficiency.	-	-	1	-	-	7	-	7	Gorsedda Junction and Portmadoc.	
216,486	3,952	2,136,597	4,001,146	1,864,549	53	783	2,520	837	14,528	678	18,563	Great Eastern.	
-	-	2,540	3,774	1,225	68	Supplied by the "Great Western" Company.						Great Marlow.	
15,387	11,579	2,212,955	3,943,832	1,730,877	56	855	1,943	538	23,001	2,251	27,733	Great Northern.	
-	-	-	-	-	-	-	-	-	-	-	-	-	
150,101	502	4,193,109	8,469,583	4,276,474	50	1,620	3,253	1,720	40,267	2,032	47,272	<i>Great North of England, Clarence, and Hartlepool Junction.</i> Great Western.	

§ Including 208† for hire and part purchase of rolling stock.

† The Ramsey and Somersham line was opened for traffic on the 16th September 1889.

|| Rent, &c., of joint stations.

** Amalgamated with the Great Western from the 1st July.

NAME OF COMPANY.	Length of Line in Miles open on 31st December 1889.	WORKING EXPENDITURE.									
		Maintenance of Way, Works, &c.	Locomotive Power (including Stationary Engines).	Repairs and Renewals of Carriages and Waggonage.	Traffic Expenses (Coaching and Merchandise).	General Charges.	Rates and Taxes.	Government Duty.	Compensation for Personal Injuries, &c.	Compensation for Damage and Loss of Goods.	Legal and Parliamentary Expenses.
	No.	£	£	£	£	£	£	£	£	£	
Gwendraeth Valleys	3	228	585	67	210	77	47	-	-	-	
Halesowen	Worked by the Great Western and Midland Companies.										
Halifax and Ovenden	3	3,405	"	"	7,248	50	581	"	"	23	
Hammersmith and City Junction	Worked jointly by the Great Western and Metropolitan.										
Harborne	Worked by the London and North-Western.										
Hayling Railways	Leased to the London, Brighton, and South Coast.										
Helston	Worked by the Great Western.										
Horncastle	Worked by the Great Northern.										
Hounslow and Metropolitan	Worked by the Metropolitan District.										
Hull, Barnsley, and West Riding Junction Railway and Dock.	66	13,926	29,676	3,733	51,807	16,026	3,553	32	-	466 2,621	
Hunstanton and West Norfolk	Worked by the Great Eastern.										
Isle of Wight (Including the "Brading Harbour.")	14	2,442	4,350	866	4,171	2,100	420	1,027	32	227	
Isle of Wight, Central (Including the "Freshwater, Yarmouth, and Newport.")	34	2,530	5,459	919	3,918	1,313	154	662	-	122	
Kettering, Thrapstone, and Huntingdon	Worked by the Midland.										
King's Lynn Docks and Railway†											
Kington and Eardisley	Worked by the Great Western.										
Lancashire and Yorkshire (Including the "Bury and Tottington District," to the 28th February, and part of the "North Union," "Preston and Longridge," and "Preston and Wyre" Joint Lines.)	522	368,214	610,759	161,365	824,247	83,569	127,316	10,293	14,279	11,659 10,643	
Leominster and Kington	Worked by the Great Western.										
Liskeard and Caradon (Including the "Liskeard and Looe Union Railway and Canal.")	22	910	1,394	234	928	102	157	4	13	18	
Liskeard and Looe Union Railway and Canal	Worked by the Liskeard and Caradon.										
Liverpool, Southport, and Preston Junction	Worked by the West Lancashire.										
Llanelly and Mynydd Mawr	12	724	1,698	114	518	402	6	-	-	9	
Llangollen and Corwen	Leased to the Great Western.										
London and Blackwall	Leased to the Great Eastern.										
London and Greenwich	Leased to the South-Eastern.										
London and North-Western (Including the "Charnwood Forest," "Cleator and Furness" Joint Line, "Harborne," "Mold and Denbigh Junction," and "Shropshire Union," and half of the "Ashby and Nuneaton," "Birkenhead and Branches," "Ludlow and Cleve Hill," "Shrewsbury and Hereford," "Shrewsbury and Wellington," "Shrewsbury and Welshpool," and "Tenbury," and part of the "North Union," "Preston and Wyre," "West London," "West London Extension," and "Whitehaven, Cleator, and Egremont.")	1,876	1,003,187	1,373,224	422,884	2,098,827	264,814	290,663	47,778	67,683	42,099 41,507	
London and South-Western (Including the "North Cornwall," "Salisbury Railway and Market House," "Sidmouth," "Stonehouse, Pool Improvement and Railway," and half of the "Weymouth and Portland," and part of the "West London Extension.")	814	298,495	433,752	130,314	535,187	65,061	104,756	23,021	6,605	7,545 4,854	
London, Brighton, and South Coast (Including the "Brighton and Dyke," "Hayling Railways," and part of the "Croydon and Oxted," "Victoria Station and Pimlico," "West London Extension," and "Woodside and Croydon.")	133	175,390	322,918	70,060	315,762	38,963	95,560	25,326	616	3,977 7,713	
London, Chatham, and Dover (Including the "Mid-Kent (Bromley to St. Mary's Cray)," and part of the "Victoria Station and Pimlico.")	184	82,066	160,348	45,394	202,482	37,108	63,281	15,562	11,170	1,417 4,465	
Londonderry (Seaham to Sunderland) (Private property.)	7	15,797	9,986	220	1,592	336	555	244	-	1	
London, Tilbury, and Southend	68	16,254	27,884	9,220	41,350	11,646	8,394	348	336	386 1,079	
Longton, Adderley Green, and Bucknall	Worked by the North Staffordshire.										
Lostwithiel and Fowey	5	Line closed since the 1st January 1880.									
Louth and East Coast	Leased to the Great Northern.										
Ludlow and Cleve Hill	Worked by the Great Western and London and North-Western jointly.										

* The charges are included in the Accounts of the working Companies.

† Line sold to the Lancashire and Yorkshire as from the 1st March 1880.

			ROLLING STOCK on 31st December 1889.				NAME OF COMPANY.					
Steamboat, Canal, and Harbour Expenses.	Miscellaneous Working Expendi- ture not included in the fore- going.	TOTAL WORKING EXPENDITURE.	TOTAL RECEIPTS, as given in the TRAFFIC RETURN, No. 2.	NET RECEIPTS.	Proportion per Cent. of Expenditure to Receipts.	CARRIAGES, WAGGONS, TRUCKS, &c.						
						Locomotives.	Carrriages used for the Con- veyance of Passengers only.	Other Vehicles attached to Passenger Trains.	Waggons of all kinds used for the Conveyance of Live Stock, Minerals, or General Merchandise.	Any other Carrriages or Wag- gons used on the Railway not included in the pre- ceding Columns.	Total Number of Vehicles of all descriptions for Con- veyance of Passengers, Live Stock, Ballast, &c.	
£	£	£	£	£		No.	No.	No.	No.	No.	No.	
-	80	1,294	2,515	1,321	51	-	-	-	25	-	25	Gwendraeth Valleys.
-	15	11,322	16,670	5,348	-	Locomotive power and rolling stock provided by the Companies owning the line.						Halesowen
-	-	-	-	-	-	-	-	-	-	-	-	Halifax and Ovenden.
-	-	-	-	-	-	-	-	-	-	-	-	Hammermith and City Junction.
-	-	-	-	-	-	-	-	-	-	-	-	Harborne.
-	-	-	-	-	-	-	-	-	-	-	-	Hayling Railways.
-	-	-	-	-	-	-	-	-	-	-	-	Helston.
-	-	-	-	-	-	-	-	-	-	-	-	Horncastle.
43,908	200	166,038	264,819	98,281	63	56	73	28	1,875	64	2,040	Hull, Barnsley, and West Riding Junction Railway and Dock.
-	68	15,607	36,091	20,484	43	8	36	16	132	2	186	Hunstanton and West Norfolk.
-	1,831	16,908	29,187	12,279	58	7	37	-	164	-	201	Isle of Wight.
-	-	-	-	-	-	-	-	-	-	-	-	Isle of Wight Central.
14,702	-	14,702	23,252	8,550	-	-	-	-	-	-	-	Kettering, Thrapstone, and Hunt- ington.
-	-	-	-	-	-	-	-	-	-	-	-	King's Lynn Docks and Railway.
-	-	-	-	-	-	-	-	-	-	-	-	Kington and Eardisley.
63,465	-	2,285,809	4,220,838	1,935,029	54	978	2,237	436	20,481	-	23,154	Lancashire and Yorkshire.
-	232	3,992	4,900	998	80	3	5	1	43	-	49	Leominster and Kington.
-	-	-	-	-	-	-	-	-	-	-	-	Liskeard and Caradon.
-	70	3,541	4,219	678	-	3	-	-	36	475	511	Liskeard and Looe Union Railway and Canal.
-	-	-	-	-	-	-	-	-	-	-	-	Liverpool, Southport, and Preston Junction.
-	-	-	-	-	-	-	-	-	-	-	-	Llanelli and Mynydd Mawr.
-	-	-	-	-	-	-	-	-	-	-	-	Llangollen and Corwen.
-	-	-	-	-	-	-	-	-	-	-	-	London and Blackwall.
-	-	-	-	-	-	-	-	-	-	-	-	London and Greenwich.
149,116	25,524	5,817,266	11,217,854	5,400,508	52	2,578	4,850	2,125	51,080	4,262	62,317	London and North-Western.
-	-	-	-	-	-	-	-	-	-	-	-	-
159,040	17,506	1,791,138	3,310,738	1,519,602	54	553	2,048	1,010	8,337	617	12,007	London and South-Western.
88,927	39,506	1,184,736	2,499,023	1,314,287	47	410	2,211	606	7,077	449	10,843	London, Brighton, and South Coast.
98,320	9,097	730,710	1,419,458	688,748	51	180	859	189	1,967	118	3,133	London, Chatham, and Dover.
-	2,883	81,564	39,143	7,579	81	11	16	2	26	-	44	Londonderry (Seaham to Sunderland).
7,450	140	124,437	238,807	114,320	52	30	245	18	751	-	1,014	London, Tilbury, and Southend.
-	-	-	-	-	-	-	-	-	-	-	-	Longton, Adderley Green and Buck- nall.
-	-	-	-	-	-	-	-	-	-	-	-	Lostwithiel and Fowey.
-	-	-	-	-	-	-	-	-	-	-	-	Louth and East Coast.
-	-	-	-	-	-	-	-	-	-	-	-	Ludlow and Cleve Hall.

† The short tramway belonging to the Company is only used for the transit of goods between the "Great Eastern" Railway and the Docks.

NAME OF COMPANY.	Length of Line in Miles open on 31st December 1889.	WORKING EXPENDITURE.									
		Maintenance of Way, Works, &c.	Locomotive Power (including Stationary Engines).	Repairs and Renewals of Carriages and Waggon.	Traffic Expenses (Coaching and Merchandise).	General Charges.	Rates and Taxes.	Government Duty.	Compensation for Personal Injuries, &c.	Compensation for Damage and Loss of Goods.	Legal and Parliamentary Expenses.
<i>Lydd</i> - - - - -		Worked by the South-Eastern.			£	£	£	£	£	£	£
Macclesfield Committee - - - - -	11	5,224	6,700		4,893	1,015	371	21	-	140	-
Maenclochog - - - - -	8	Line closed for Traffic.									
Manchester and Milford - - - - -	41	6,271	4,215	1,068	2,990	1,107	212	168	-	26	111
Manchester, Sheffield, and Lincolnshire (Including the "Wigan Junction" and part of the "West Riding and Grimsby.") - - - - -	314	130,495	223,753	75,034	353,213	53,108	50,075	2,115	6,018	5,262	9,767
Manchester, South Junction, and Altrincham - - - - -	9	12,231	8,052	4,537	16,444	3,957	3,211	1,273	5	18	183
Marlborough - - - - -		Worked by the Great Western.									
Maryport and Carlisle - - - - -	41	9,031	16,978	5,490	11,728	2,786	2,855	180	-	97	-
Mawddwy - - - - -	7	413	530	15	128	114	24	24	-	-	4
Mellis and Eye - - - - -		Worked by the Great Eastern.									
Merrybent and Darlington - - - - -	6	41	30	-	357	50	45	-	-	-	-
Mersey - - - - -	4	2,363	13,442	961	12,006	4,858	1,849	215	23	-	1,094
Methley Joint Railway - - - - -	6	4,684	-	-	1,754	187	391	3	-	-	-
Metropolitan (Including half the "Hammersmith and City.") - - - - -	38	35,286	73,732	26,982	84,686	30,478	41,243	4,132	121	3	3,244
Metropolitan District (Including the "Richmond," "Ealing," and "Fulham" Extensions, and "Hounslow and Metropolitan.") - - - - -	19	22,843	52,389	12,418	52,623	21,029	23,201	3,021	-	-	2,581
Metropolitan and Metropolitan District City Lines and Extensions. - - - - -	2	2,712	14,183		8,748	2,034	1,495	254	-	1	6
Mid Kent (Bromley to St. Mary's Cray) - - - - -		Leased to the London, Chatham, and Dover.									
Midland (Including the "Barnoldswick," "Kettering, Thrapstone, and Huntingdon," "Manchester, Buxton, Matlock, and Midland Junction," the "Furness and Midland" Joint Line, and half the "Ashby and Nuneaton," "Clifton Extension," the "Great Western and Midland," from Malvern Wells to Malvern Link, "Midland and North-Eastern Committee," "Otley and Ilkley," "Tottenham and Hampstead Junction," and part of the "Halesowen" and "Neath and Brecon.") - - - - -	1,375	559,881	1,202,700	642,553	1,474,268	144,424	227,245	15,034	8,815	25,097	23,767
Midland and North-Eastern Committee (Swinton to Knottingley.) - - - - -		Included in the Returns of the Midland and the North-Eastern Companies.									
Midland and South-Western Junction - - - - -	41	5,065	5,828	798	4,544	1,467	442	39	-	24	90
Mid Wales - - - - -		Worked by the Cambrian.									
Milford - - - - -		Worked by the Great Western.									
Milford Haven Dock and Railway - - - - -	1	67	145	27	148	100	17	-	-	-	-
Minehead - - - - -		Worked by the Great Western.									
Mold and Denbigh Junction - - - - -		Worked by the London and North-Western.									
Much Wenlock and Severn Junction - - - - -		Worked by the Great Western.									
Muswell Hill and Palace Railway - - - - -		Worked by the Great Northern.									
Nantwich and Market Drayton - - - - -		Worked by the Great Western.									
Neath and Brecon* - - - - -	40	2,151	2,336	1,387	2,774	704	298	9	-	25	92
Newent - - - - -		Worked by the Great Western.									
Northampton and Banbury Junction - - - - -	15	1,972	2,133		1,893	603	162	86	-	27	150
North and South Western Junction - - - - -	5	3,182	569		4,461	801	743	5	-	-	192
North Cornwall - - - - -		Worked by the London and South-Western.									
North-Eastern (Including the "Great North of England, Clarence, and Hartlepool Junction," "Scarborough and Whitby," "Whitby, Redcar, and Middlesbrough Union," to the 30th June, half the "Midland and North-Eastern Committee," and part of the "Otley and Ilkley" Joint Lines.) - - - - -	1,599	551,029	1,132,660	562,783	923,002	107,065	198,747	11,604	28,766	10,074	12,206
Northern and Eastern - - - - -		Leased to the Great Eastern.									
North London - - - - -	12	30,343	81,146	22,942	79,479	15,170	31,432	1,675	337	87	695
North Staffordshire (Including the "Longton, Adderley Green, and Bucknall.") - - - - -	193	69,223	73,399	16,976	89,190	16,891	15,212	1,346	5,244	2,693	2,298
North Wales (Narrow Gauge) - - - - -	12	978	797	250	794	225	33	17	-	2	15
Nottingham and Grantham Railway and Canal - - - - -		Leased to the Great Northern.									
Nottingham Suburban - - - - -		Worked by the Great Northern.									
Oldbury - - - - -		Worked by the Great Western.									
Oldham, Ashton-under-Lyne, and Guide Bridge Junction. - - - - -	6	6,556	9,621		5,934	762	591	26	36	37	150

* Part of the Neath and Brecon line, 29 miles in length, was worked by the "Midland" Company up to the 30th June, but after that date by the Neath and Brecon Company. The expenditure on account of the 29 miles for the half year is included in Midland Company's Return.

§ Towards this expenditure the Company received 52,472*l.* for working other Companies' traffic.

|| Including 1,967*l.* paid for legal expenses in the action Barton v. North Staffordshire Railway Company.

						ROLLING STOCK on 31st December 1889.						NAME OF COMPANY.
Steamboat, Canal, and Harbour Expenses.	Miscellaneous Working Expendi- ture not included in the fore- going.	TOTAL WORKING EXPENDITURE.	TOTAL RECEIPTS as given in the TRAFFIC RETURN, No. 2.	NET RECEIPTS.	Proportion per Cent. of Expenditure to Receipts.	CARRIAGES, WAGGONS, TRUCKS, &c.						
						Locomotives.	Carriages used for the Con- veyance of Passengers only.	Other Vehicles attached to Passenger Trains.	Waggons of all kinds used for the Conveyance of Live Stock, Minerals, or General Merchandise.	Any other Carriages or Wag- gons used on the Railway, not included in the pre- ceding Columns.	Total Number of Vehicles of all descriptions for Con- veyance of Passengers, Live Stock, Ballast, &c.	
£	£	£	£	£		No.	No.	No.	No.	No.	No.	
-	100	18,464	19,915	1,451	93	Locomotive power and rolling stock provided by the "Manchester, Sheffield, and Lincolnshire" and "North Staffordshire" Railway Companies.						Lydd.
-	240	16,408	19,575	3,167	84	5	14	5	112	3	134	Macclesfield Committee.
139,605	44,236	1,092,686	2,193,115	1,100,429	50	563	754	146	13,323	-	14,223	Maenciochog.
-	-	50,111	113,378	63,267	44	†	119	5	4	14	142	Manchester and Milford.
-	462	49,627	116,060	66,433	43	26	33	15	1,753	9	1,810	Manchester, Sheffield, and Lincoln- shire.
-	8	1,260	1,182	78 Deficiency.	107	2	5	-	-	-	5	Manchester, South Junction, and Altrincham.
-	-	523	467	56 Deficiency.	112	2	-	-	4	-	4	Marlborough.
-	9,890	46,701	55,683	8,982	81	15	79	-	-	6	85	Maryport and Carlisle.
-	21	7,020	12,818	5,793	-	Locomotive power and rolling stock supplied by the Companies working the traffic.						Mawddwy.
-	300	300,207	692,921	392,714	43	67	328	-	70	-	398	Mellis and Eye.
-	31	190,036	397,102	207,066	48	54	350	-	27	-	377	Merrybent and Darlington.
-	-	29,433	34,596	5,163	-	The traffic is carried in the trains of the Companies owning the line.						Mersey.
4,379	10,264	4,338,427	8,269,838	3,931,411	52	1,844	2,487	1,445	91,552	-	95,484	Methley Joint Railway.
-	-	-	-	-	-	Mid Kent (Bromley to St. Mary's Cray).						Metropolitan.
-	-	-	-	-	-	Midland.						Metropolitan District.
-	-	-	-	-	-	Midland and North-Eastern Com- mittee.						Metropolitan and Metropolitan Dis- trict City Lines and Extensions.
-	-	18,297	18,242	55 Deficiency.	100	8	17	16	115	3	151	Mid Kent (Bromley to St. Mary's Cray).
-	-	-	-	-	-	Midland and South-Western Junction.						Midland.
-	-	-	-	-	-	Mid Wales.						Milford.
-	9	513	301	212 Deficiency.	-	1	-	-	15	-	15	Milford Haven Dock and Railway.
-	-	-	-	-	-	Minehead.						Mold and Denbigh Junction.
-	-	-	-	-	-	Much Wenlock and Severn Junction						Muswell Hill and Palace Railway.
-	1,610	11,386	20,906	9,520	54	5	5	2	57	5	69	Nantwich and Market Drayton.
-	-	-	-	-	-	Neath and Brecon.						Newent.
-	-	7,026	7,965	989	88	Locomotive power and rolling stock supplied by the "London and North-Western" Company.						Northampton and Banbury Junction.
-	-	9,953	2,719	7,234 Deficiency.	-	-	-	-	-	-	-	North and South Western Junction.
85,331	-	3,623,267	6,842,100	3,218,833	53	1,521	2,160	769	78,903	-	81,862	North Cornwall.
-	-	-	-	-	-	North-Eastern.						Northern and Eastern.
4,642	6,524	274,472	488,248	266,248	45	103	536	106	306	211	1,159	North London.
41,204	6,029	339,705	704,715	365,010	48	131	256	111	4,969	72	5,408	North Staffordshire.
-	-	3,111	3,561	450	87	3	8	-	120	-	128	North Wales (Narrow Gauge).
-	-	-	-	-	-	Nottingham and Grantham Railway and Canal.						Nottingham Suburban.
-	-	-	-	-	-	Oldbury.						Oldham, Ashton-under-Lyne, and Guide Bridge Junction.
-	563	24,276	27,451	3,175	88	Provided by the "Manchester, Sheffield, and Lincoln- shire" and "London and North-Western" Railway Companies.						

† Sold to the North-Eastern as from the 1st July.

† Locomotive power supplied by the Manchester, Sheffield, and Lincolnshire Railway Company.

‡ Including 4,949† paid for the purchase of stock to replace stock incorrectly transferred.

NAME OF COMPANY.	Length of Line in Miles open on 31st December 1889.	WORKING EXPENDITURE.									
		Maintenance of Way, Works, &c.	Locomotive Power (including Stationary Engines).	Repairs and Renewals of Carriages and Waggon.	Traffic Expenses (Coaching and Merchandise).	General Charges.	Rates and Taxes.	Government Duty.	Compensation for Personal Injuries, &c.	Compensation for Damage and Loss of Goods.	Legal and Parliamentary Expenses.
	No.	£	£	£	£	£	£	£	£	£	£
Pembroke and Tenby	29	3,154	4,061	1,069	2,712	1,611	313	517	-	16	81
<i>Penarth Extension</i>	<i>Leased to the Taff Vale.</i>										
<i>Penarth Harbour, Dock, and Railway</i>	<i>Leased to the Taff Vale.</i>										
Plymouth and Dartmoor	11†	-	-	-	-	101	9	-	-	-	-
Pontypridd, Caerphilly, and Newport	<i>See note, page iii.</i>										
Portmadoc, Croesor, and Beddgelert	5	87	144‡	-	-	73	20	-	-	-	-
Potteries, Shrewsbury, and North Wales	28	Line closed for Traffic.									
<i>Princetown</i>	<i>Worked by the Great Western.</i>										
<i>Ramsey and Somersham Junction</i>	<i>Worked by the Great Eastern.</i>										
Ravenglass and Eskdale	7	231	330	21	149	69	4	29	-	-	20
Redruth and Chasewater	10	466	726	230	1,288	448	123	-	-	-	-
Rhondda and Swansea Bay	9	1,087	1,794	169	1,918	705	248	12	-	-	-
Rhymney	46	15,090	34,715	5,938	18,390	6,063	7,563	120	-	39	3,880
<i>Ross and Ledbury</i>	<i>Worked by the Great Western.</i>										
<i>Ross and Monmouth</i>	<i>Worked by the Great Western.</i>										
Rowrah and Kelton Fell Mineral	3	439	832	-	65	-	36	-	-	-	-
<i>Royston and Hitchin</i>	<i>Leased to the Great Northern.</i>										
St. Anstell and Penewan Railway, Harbour, and Dock, for the year ended 29th September 1889.	4	150	120	200	530	210	170	-	-	-	-
<i>Salisbury Railway and Market House</i>	<i>Worked by the London and South-Western.</i>										
Saundersfoot Railway and Harbour	4	326	113	137	67	172	35	-	-	-	-
<i>Scarborough and Whitby</i>	<i>Worked by the North-Eastern.</i>										
Seacombe, Hoylake, and Deeside (including the "Wirral.")	11	1,890	4,493	773	3,561	1,149	792	1,144	-	-	3
Severn and Wye and Severn Bridge	37	10,119	6,898	1,125	4,695	1,733	1,167	201	51	13	164
Sheffield and Midland Committee	27	14,717	34,933	13,161	15,871	2,170	1,776	234	-	420	141
<i>Shrewsbury and Hereford</i>	<i>Leased to the Great Western and London and North-Western.</i>										
<i>Shropshire Union Railways and Canal</i>	<i>Leased to the London and North-Western.</i>										
<i>Sidmouth</i>	<i>Worked by the London and South-Western.</i>										
Snailbeach District	3	105	158	-	28	117	13	-	-	-	-
Somerset and Dorset, for the year ended 31st October 1889. (Worked by the "Midland" and "London and South-Western" Companies jointly.)	94	23,346	45,607	13,093	27,837	4,947	2,094	430	1,235	632	3,119
South-Eastern (including the "Elham Valley (Light)," "London and Greenwich," "Lydd," and part of the "Croydon and Oxted" and "Woodside and Croydon" Joint lines.)	393	125,329	254,919	90,581	308,883	73,386	101,536	21,674	2,807	3,091	14,128
<i>Southport and Cheshire Lines Extension</i>	<i>Worked by the Cheshire Lines Committee.</i>										
South Wales Mineral, for the year ended 30th September 1889.	13	2,581	2,031	74	4,149	677	247	-	-	88	-
Southwold	9	654	658	13	861	335	30	12	-	-	-
<i>Spilsby and Firsby</i>	<i>Worked by the Great Northern.</i>										
<i>Staines and West Drayton</i>	<i>Worked by the Great Western.</i>										
<i>Stamford and Essendine</i>	<i>Worked by the Great Northern.</i>										
Stocksbridge	2	261	614	-	110	42	219	-	-	-	66
<i>Stonehouse Pool Improvement and Railway</i>	<i>Worked by the London and South-Western.</i>										
<i>Sutton and Willoughby</i>	<i>Worked by the Great Northern.</i>										
Taff Vale (including the "Aberdare," "Cardiff, Penarth, and Caerlloxton Juxta-Barry Junction" to the 30th June,* "Cowbridge" to the 30th June,* "Dure Valley" to the 30th June,* "Glantresant and Taff Vale Junction" to the 30th June,* "Penarth Extension," "Penarth Harbour, Dock, and Railway," "Rhondda Valley and Hirwaun Junction" to the 30th June,* and "Treierig Valley" to the 30th June.†)	113	60,745	135,169	28,755	84,729	21,226	33,411	804	46	359	7,170

* Amalgamated with the Taff Vale from the 1st July.

† Mineral tramway, for the use of which a toll is paid.

‡ Cost of horse power.

			ROLLING STOCK on 31st December 1889.									NAME OF COMPANY.
Steamboat, Canal, and Harbour Expenses.	Miscellaneous Working Expenditure not included in the foregoing.	TOTAL WORKING EXPENDITURE.	TOTAL RECEIPTS, as given in the TRAFFIC RETURNS, No. 2.	NET RECEIPTS.	Proportion per Cent. of Expenditure to Receipts.	CARRIAGES, WAGGONS, TRUCKS, &c.						
						Locomotives.	Carriages used for the Conveyance of Passengers only.	Other Vehicles attached to Passenger Trains.	Waggons of all kinds used for the Conveyance of Live Stock, Minerals, or General Merchandise.	Any other Carriages or Waggon used on the Railway, not included in the preceding Columns.	Total Number of Vehicles of all descriptions for Conveyance of Passengers, Live Stock, Ballast, &c.	
£	£	£	£	£		No.	No.	No.	No.	No.	No.	
-	243	13,777	25,994	12,217	53	7	20	3	196	5	224	Pembroke and Tenby. <i>Penarth Extension.</i> <i>Penarth Harbour, Dock, and Railway.</i>
-	-	110	798	688	-	-	-	-	-	-	-	Plymouth and Dartmoor.
-	-	-	-	-	-	-	-	-	-	-	-	Pontypridd, Caerphilly, and Newport.
-	26	350	330	30	-	-	-	-	-	-	-	Portmadoc, Croesor, and Beddgelert. Potteries, Shrewsbury, and North Wales. <i>Princetown.</i>
-	-	-	-	-	-	-	-	-	-	-	-	<i>Ramsey and Somersham Junction.</i>
-	5	858	920	62	93	2	3	1	19	-	23	Ravenglass and Eskdale.
-	308	3,589	3,946	367	91	3	-	-	90	-	90	Redruth and Chasewater.
-	-	5,883	13,726	7,843	43	9	26	-	195	4	225	Rhondda and Swansea Bay.
-	-	91,798	186,179	94,381	49	56	58	8	599	33	696	Rhymney. <i>Ross and Ledbury.</i> <i>Ross and Monmouth.</i>
-	86	1,458	3,451	1,993	42	-	-	-	-	-	-	Rowrah and Kelton Fell Mineral. <i>Royston and Hitchin.</i>
-	20	1,400	2,606	1,206	54	1	1	-	30	-	31	St. Austell and Pentewan Railway, Harbour, and Dock. <i>Salisbury Railway and Market House.</i>
98	-	948	746	203 Deficiency.	127	1	-	-	61	-	61	Saundersfoot Railway and Harbour. <i>Scarborough and Whitby.</i>
-	-	13,805	25,487	11,682	54	9	43	-	50	-	93	Seacombe, Hoylake, and Deeside.
1,892	791	28,849	44,459	15,610	65	12	12	2	2	47	63	Severn and Wye and Severn Bridge.
-	560	83,983	125,192	41,209	67	Locomotive power and rolling stock provided by the "Manchester, Sheffield, and Lincolnshire," and "Midland" Railway Companies.						Sheffield and Midland Committee. <i>Shrewsbury and Hereford.</i> <i>Shropshire Union Railways and Canal.</i> <i>Sidmouth.</i>
-	53	474	550	76	86	2	-	-	53	-	53	Snailbeach District.
-	4,840	127,230	157,217	29,937	81	55	102	38	966	68	1,174	Somerset and Dorset.
91,587	19,491	1,112,462	2,261,439	1,148,977	49	352	1,006	555	4,692	292	7,145	South-Eastern. <i>Southport and Cheshire Lines Extension.</i> South Wales Mineral.
-	77	9,927	10,165	238	98	5	-	-	5	2	7	Southwold.
-	-	2,563	3,391	828	76	2	6	-	14	3	23	<i>Spilsby and Firsby.</i> <i>Staines and West Drayton.</i> <i>Stamford and Essendine.</i>
-	-	1,312	3,287	1,975	40	1	-	-	-	-	-	Stocksbridge. <i>Stonehouse Pool Improvement and Railway.</i> <i>Sutton and Willoughby.</i>
29,920	37,303	439,637	843,831	404,194	52	172	17	46	2,102	218	2,626	Taff Vale.

See note ||, page 57.

NAME OF COMPANY.	Length of Line in Miles open on 31st December 1889.	WORKING EXPENDITURE.									
		Maintenance of Way, Works, &c.	Locomotive Power (including Stationary Engines).	Repairs and Renewals of Carriages and Waggon.	Traffic Expenses (Coaching and Merchandise).	General Charges.	Rates and Taxes.	Government Duty.	Compensation for Personal Injuries, &c.	Compensation for Damage and Loss of Goods.	Legal and Parliamentary Expenses.
	No.	£	£	£	£	£	£	£	£	£	£
Talylyn, for the year ended 30th September 1889	7	308	307	179	286	174	165	1	-	-	1
Teign Valley	Worked by the Great Western.										
Tenbury	Worked by the Great Western and London and North-Western.										
Thetford and Watton	Worked by the Great Eastern.										
Tiverton and North Devon	Worked by the Great Western.										
Tottenham and Hampstead Junction	Worked by the Great Eastern and Midland.										
Vale of Llanguollen	Worked by the Great Western.										
Van	7	186	215	1	48	71	12	-	-	-	-
Victoria Station and Pimlico	Line used by the Great Western, London, and North-Western, London, Brighton, and South Coast, and London, Chatham, and Dover.										
Wainfleet and Firsby	Worked by the Great Northern.										
Watton and Swaffham	Worked by the Great Eastern.										
Wellington and Severn Junction	Leased to the Great Western.										
Wenlock	Worked by the Great Western.										
West Cornwall Railway	See under Great Western.										
West Lancashire (Including "Liverpool, Southport, and Preston Junction.")	25	3,731	7,573	1,632	10,574	1,693	416	50	-	60	27
West London	Leased to the West London Extension.										
West London Extension	Line worked by the Great Western, London and North-Western, London and South-Western, and London, Brighton, and South Coast.										
West Riding and Grimsby	Included in the returns of the Great Northern and Manchester, Sheffield, and Lincolnshire.										
West Somerset	Leased to the Great Western.										
West Somerset Mineral	12*	530	484	75	686	42	1	-	-	-	52
Weymouth and Portland	Worked by the Great Western and London and South-Western.										
Whitland and Cardigan	Worked by the Great Western.										
Wigan Junction	Worked by the Manchester, Sheffield, and Lincolnshire.										
Wirral	Worked by the Seacombe, Hoylake, and Deeside.										
Witney	Worked by the Great Western.										
Wivenhoe and Brightlingsea	Worked by the Great Eastern.										
Woodside and South Croydon Joint Committee	Included in the returns of the London, Brighton, and South Coast, and South-Eastern.										
Wrexham, Mold, and Connah's Quay (Including the "Buckley.")	18	4,903	6,431	1,215	5,907	2,775	618	20	104	38	664
Wye Valley	Worked by the Great Western.										
TOTAL ENGLAND AND WALES	14,034	5,466,737	9,031,518	3,180,229	10,628,511	1,490,076	1,952,620	299,818	160,543	162,279	219,295
			76,682		686						

* Of this length 5 miles are open for goods and mineral traffic only.

Steamboat, Canal, and Harbour Expenses.			TOTAL RECEIPTS, as given in the TRAFFIC RETURN, No 2.	NET RECEIPTS.	Proportion per Cent. of Expenditure to Receipts.	ROLLING STOCK on 31st December 1889.						NAME OF COMPANY.
£	£	£				Locomotives.	CARRIAGES, WAGGONS, TRUCKS, &c.					
							Carriages used for the Conveyance of Passengers only.	Other Vehicles attached to Passenger Trains.	Waggons of all kinds used for the Conveyance of Live Stock, Minerals, or General Merchandise.	Any other Carriages or Waggons used on the Railway, not included in the preceding Columns.	Total Number of Vehicles of all descriptions for Conveyance of Passengers, Live Stock, Ballast, &c.	
No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	
-	-	1,421	1,159	262 Deficiency.	123	2	4	1	111	-	110	Talylyn. Teign Valley. Tenbury. Thetford and Watton. Tiverton and North Devon. Tottenham and Hampstead Junction.
-	-	533	906	373	59	2	-	-	-	2	2	Vale of Llangollen. Van. Victoria Station and Pimlico.
-	-	45	25,193	617 Deficiency.	102	10	67	18	237	-	372	Wainfleet and Firsby. Watton and Swaffham. Wellington and Severn Junction. Wenlock. West Cornwall Railway.
-	-	149	2,019	6,894	4,875	2	3	-	86	3	92	West Lancashire. West London. West London Extension. West Riding and Grimsby. West Somerset.
721	1,399	24,795	48,508	23,713	51	16	28	9	187	5	227	West Somerset Mineral. Weymouth and Portland. Whitland and Cardigan. Wigan Junction. Wirral. Witney. Wivenhoe and Brightlingsea. Woodside and South Croydon Joint Committee. Wrexham, Mold, and Connah's Quay. Wye Valley.
1,430,924	355,223	34,402,969†	65,675,969	31,273,000	52	13,447	30,512	11,057	385,079	12,725	439,373	TOTAL ENGLAND AND WALES.

† Exclusive of 52,472£, received by the "North London" for working other lines.

No. 3.—Working Expenditure, Net Receipts,

THE FINANCIAL YEAR OF THE SCOTCH RAILWAY COMPANIES, EXCEPT

NAME OF COMPANY.	Length of line in Miles open on 31st January 1890.	WORKING EXPENDITURE.									
		Maintenance of Way, Works, &c.	Locomotive Power (including Stationary Engines).	Repairs and Renewals of Carriages and Waggon.	Traffic Expenses (Coaching and Merchandise).	General Charges.	Rates and Taxes.	Government Duty.	Compensation for Personal Injuries, &c.	Compensation for Damage and Loss of Goods.	Legal and Parliamentary Expenses.
		No.	£	£	£	£	£	£	£	£	£
Anstruther and St. Andrews - - - -		Worked by the North British.									
Arbroath and Forfar - - - -		Leased to the Caledonian.									
Ayr and Maybole - - - -		Leased to the Glasgow and South-Western.									
Ayrshire and Wigtownshire - - - -	31	3,314	3,490	347	1,489	1,151	-	36	-	15	-
Blane Valley - - - -		Worked by the North British.									
Caledonian - - - -	871	220,886	372,200	183,702	463,760	70,055	78,974	8,894	8,769	6,990	18,819
(Including the "Arbroath and Forfar," "Callander and Oban," "Cathcart District," "Dundee and Newtyle," "Greenock and Wemyss Bay," "Killin," "Kilsyth and Bonnybridge," "Lanarkshire and Ayrshire," "Moffat," to the 10th November," "Solway Junction," and half the "Glasgow and Kilmarnock" and "Glasgow and Paisley" Joint Lines.)											
Callander and Oban - - - -		Worked by the Caledonian.									
Cathcart District - - - -		Worked by the Caledonian.									
City of Glasgow Union - - - -	7	4,774	-	-	8,479	1,870	3,281	88	21	2	418
Dundee and Newtyle - - - -		Leased to the Caledonian.									
Edinburgh and Bathgate - - - -		Leased to the North British.									
Findhorn - - - -		Line closed since 30th January 1889.									
Forth and Clyde Junction - - - -		Leased to the North British.									
Glasgow and South-Western - - - -	347	129,644	146,532	72,369	188,651	23,718	34,635	2,979	718	1,556	9,354
(Including the "Ayr and Maybole," "Kilmarnock and Troon," and half the "Glasgow and Kilmarnock" and "Glasgow and Paisley" Joint Lines.)											
Glasgow, Yoker, and Clydebank - - - -		Worked by the North British.									
Great North of Scotland - - - -	316	37,080	46,041	12,494	50,008	8,473	10,577	1,039	3,131	523	635
(Including the "Buckie Extension.")											
Greenock and Wemyss Bay - - - -		Worked by the Caledonian.									
Highland, for the year ended 28th February 1890 - - - -	418	47,201	54,108	18,841	53,543	10,871	9,598	2,220	748	1,111	3,006
Killin - - - -		Worked by the Caledonian.									
Kilmarnock and Troon - - - -		Leased to the Glasgow and South-Western.									
Kilsyth and Bonnybridge - - - -		Worked by the Caledonian.									
Lanarkshire and Ayrshire - - - -		Worked by the Caledonian.									
Newport - - - -		Leased to the North British.									
North British - - - -	1,046	237,591	364,100	148,580	467,871	54,370	60,222	8,728	3,040	7,170	8,077
(Including the "Anstruther and St. Andrews," "Blane Valley," "Edinburgh and Bathgate," "Forth and Clyde Junction," "Glasgow, Yoker, and Clydebank," "Newport," and "Strathendrick and Aberfoyle.")											
Port Patrick and Wigtownshire Joint Committee - - - -	82	14,009	16,653	272	8,034	1,400	508	151	-	-	68
Solway Junction - - - -		Leased to the Caledonian.									
Strathendrick and Aberfoyle - - - -		Worked by the North British.									
TOTAL SCOTLAND - - - -	3,118	694,490	1,002,124	436,605	1,241,835	171,908	197,790	24,135	16,422	17,367	40,977

* Amalgamated with the Caledonian from the 11th November.

and Rolling Stock, SCOTLAND, in 1889.

WHEN OTHERWISE STATED, ENDED ON THE 31ST JANUARY 1890.

						ROLLING STOCK on 31st January 1890.						NAME OF COMPANY.
Steamboat, Canal, and Harbour Expenses.	Miscellaneous Working Expendi- ture not included in the fore- going.	TOTAL WORKING EXPENDITURE.	TOTAL RECEIPTS, as given in the TRAFFIC RETURN, No. 2.	NET RECEIPTS.	Proportion per Cent. of Expenditure to Receipts.	CARRIAGES, WAGGONS, TRUCKS, &c.						
						Locomotives.	Carriages used for the Con- veyance of Passengers only.	Other Vehicles attached to Passenger Trains.	Waggons of all kinds used for the Conveyance of Live Stock, Minerals, or General Merchandise.	Any other Carriages or Wag- gons used on the Railway, not included in the pre- ceding Columns.	Total Number of Vehicles of all descriptions for Con- veyance of Passengers, Live Stock, Ballast, &c.	
£	£	£	£	£		No.	No.	No.	No.	No.	No.	
-	2,405	12,247	13,207	960	93	7	20	12	40	-	81	Anstruther and St. Andrews. Arbroath and Forfar. Ayr and Maybole. Ayrshire and Wigtownshire. Blane Valley.
32,672	54,136	1,519,857	3,201,100	1,681,243	47	690	1,234	441	44,808	689	47,152	Caledonian.
-	1,679	20,612	75,168	54,556	-	Traffic is carried in the trains of the Companies running over the line.						Callander and Oban. Cathcart District. City of Glasgow Union. Dundee and Newtyle. Edinburgh and Bathgate. Findhorn. Forth and Clyde Junction. Glasgow and South-Western. Glasgow, Yoker, and Clydebank. Great North of Scotland. Greenock and Wemyss Bay. Highland. Killin. Kilmarnock and Troon. Kilsyth and Bonnybridge. Lanarkshire and Ayrshire. Newport. North British.
411	7,563	617,312	1,186,521	569,209	52	301	729	240	12,089	324	13,341	
-	8,604	210,441	409,104	198,723	51	85	221	96	2,434	40	2,802	
44,201	33,859	1,437,899	3,023,995	1,586,096	47	628	1,612	469	42,232	144	44,457	
-	3,482	43,547	47,404	3,947	22	6†	14	11	31	-	56†	Port Patrick and Wigtownshire Joint Committee. Solway Junction. Strathendrick and Aberfoyle.
77,374	118,854	4,039,890	8,307,860	4,267,960	49	1,791	4,077	1,554	103,917	1,230	110,778	TOTAL SCOTLAND.

† The rolling stock for the Portpatrick Section of the line is provided by the "Caledonian" and "Glasgow and South-Western" Companies.

No. 3.—Working Expenditure, Net Receipts,

NAME OF COMPANY.	Length of Line in Miles open on 31st December 1889.	WORKING EXPENDITURE.									
		Maintenance of Way, Works, &c.	Locomotive Power (including Stationary Engines).	Repairs and Renewals of Carriages and Waggon.	Traffic Expenses (Coaching and Merchandise).	General Charges.	Rates and Taxes.	Government Duty.	Compensation for Personal Injuries, &c.	Compensation for Damage and Loss of Goods.	Legal and Parliamentary Expenses.
	No.	£	£	£	£	£	£	£	£	£	£
<i>Athenry and Ennis Junction</i> - - - - -	<i>Leased to the Waterford and Limerick.</i>										
<i>Athenry and Tuam</i> - - - - -	<i>Leased to the Waterford and Limerick.</i>										
Ballycastle - - - - -	16	793	837	106	646	199	51	-	-	5	21
Belfast and County Down - - - - -	68	11,291	9,700	3,672	10,790	3,915	946	-	108	42	360
Belfast and Northern Counties (Including the "Ballymena and Larne" to the 30th June,* "Carrickfergus and Larne," "Derry Central," "Draperstown," and "Limavady and Dungiven.")	249	34,087	35,186	11,719	33,585	10,119	4,698	-	60	220	147
<i>Carrickfergus and Larne</i> - - - - -	<i>Worked by the Belfast and Northern Counties.</i>										
<i>Clara and Banagher</i> - - - - -	<i>Worked by the Great Southern and Western of Ireland.</i>										
<i>Clonakilty Extension</i> - - - - -	<i>Worked by the Cork, Bandon, and South Coast.</i>										
Cork and Macroom Direct - - - - -	25	4,711	2,235	693	2,711	438	555	-	-	-	5
Cork, Bandon, and South Coast (Including the "Bantry Extension," "Clonakilty Extension," and "Ilen Valley.")	85	12,905	8,485	3,078	8,844	2,033	1,375	-	689	17	659
Cork, Blackrock, and Passage - - - - -	6	901	1,552	432	1,541	665	680	-	-	10	45
<i>Derry Central</i> - - - - -	<i>Worked by the Belfast and Northern Counties.</i>										
<i>Draperstown</i> - - - - -	<i>Worked by the Belfast and Northern Counties.</i>										
<i>Dublin and Kingstown</i> - - - - -	<i>Leased to the Dublin, Wicklow, and Wexford.</i>										
Dublin, Wicklow, and Wexford (Including the "Dublin and Kingstown.")	143	26,542	31,435	9,235	30,035	7,755	11,592	-	79	82	639
Dundalk, Newry, and Greenore - - - - -	26	2,923	2,542	345	5,374	467	207	-	860	213	167
<i>Enniskillen, Bundoran, and Sligo</i> - - - - -	<i>Worked by the Great Northern of Ireland.</i>										
<i>Fermoy and Lismore</i> - - - - -	<i>Worked by the Great Southern and Western of Ireland.</i>										
Finn Valley (Including the "West Donegal.")	31	2,117	2,041	487	1,695	538	189	-	-	8	23
Great Northern of Ireland (Including the "Enniskillen, Bundoran, and Sligo.")	522	93,176	88,048	30,560	92,148	15,289	15,923	-	66,453	1,324	1,863
<i>Great Northern and Western of Ireland</i> - - - - -	<i>Worked by the Midland Great Western of Ireland.</i>										
Great Southern and Western of Ireland (Including the "Clara and Banagher," and "Fermoy and Lismore.")	543	95,179	112,138	38,034	110,779	16,967	28,169	-	478	1,263	1,360
<i>Ilen Valley</i> - - - - -	<i>Worked by the Cork, Bandon, and South Coast.</i>										
Kanturk and Newmarket - - - - -	9	249	648	159	953	346	-	-	-	-	-
<i>Kilkenny Junction</i> - - - - -	<i>Worked by the Waterford and Central Ireland.</i>										
<i>Letterkenny</i> - - - - -	<i>Worked by the Londonderry and Lough Swilly.</i>										
<i>Limavady and Dungiven</i> - - - - -	<i>Worked by the Belfast and Northern Counties.</i>										
<i>Limerick and Kerry</i> - - - - -	<i>Worked by the Waterford and Limerick.</i>										
Listowel and Ballybunion - - - - -	9	480	827	92	429	217	6	-	-	12	8
Londonderry and Lough Swilly (Including "Letterkenny.")	31	2,648	2,530	149	2,397	932	121	-	250	34	105

* Amalgamated with the "Belfast and Northern Counties" as from the 1st July 1889.

and Rolling Stock, IRELAND, in 1889.

ROLLING STOCK on 31st December 1889.													NAME OF COMPANY.
Steamboat, Canal, and Harbour Expenses.	Miscellaneous Working Expenditure not included in the foregoing.	TOTAL WORKING EXPENDITURE.	TOTAL RECEIPTS, as given in the TRAFFIC RETURN, No. 2.	NET RECEIPTS.	Proportion per Cent. of Expenditure to Receipts.	CARRIAGES, WAGGONS, TRUCKS, &c.							
						Locomotives.	Carriages used for the Conveyance of Passengers only.	Other Vehicles attached to Passenger Trains.	Waggons of all kinds used for the Conveyance of Live Stock, Minerals, or General Merchandise.	Any other Carriages or Waggons used on the Railway, not included in the preceding Columns.	Total Number of Vehicles of all descriptions for Conveyance of Passengers, Live Stock, Ballast, &c.		
£	£	£	£	£		No.	No.	No.	No.	No.	No.		
-	26	2,684	4,309	1,625	62	3	8	2	60	-	-	70	Athenry and Ennis Junction.
-	390	41,214	91,244	50,030	45	20	109	16	386	-	-	511	Athenry and Tuam.
-	32	129,853	249,910	119,057	52	58	161	73	1,881	46	2,161	Ballycastle.	
													Belfast and County Down.
													Belfast and Northern Counties.
													Carrickfergus and Larne.
													Clara and Banagher.
													Clonakilty Extension.
-	-	11,348	14,800	3,452	77	4	13	3	83	-	-	99	Cork and Macroom Direct.
-	501	38,566	70,635	32,069	55	15	36	11	246	4	297	Cork, Bandon, and South Coast.	
5,838	75	11,739	16,995	5,256	69	3	14	-	4	-	-	13	Cork, Blackrock, and Passage.
													Derry Central.
													Draperstown.
													Dublin and Kingstown.
-	875	118,269	248,168	129,899	48	51	186	50	609	20	865	Dublin, Wicklow, and Wexford.	
-	33	13,621	13,702	81	99	5	12	10	214	7	243	Dundalk, Newry, and Greenore.	
													Enniskillen, Bundoran, and Sligo.
													Fernoy and Lismore.
-	408	7,506	11,251	3,745	67	3	16	7	70	-	-	93	Finn Valley.
-	388	405,177	706,271	301,094	57	137	289	215	3,362	144	4,020	Great Northern of Ireland.	
-	5,176	407,543	782,613	375,070	52	176	304	221	3,521	-	-	4,046	Great Northern and Western of Ireland. Great Southern and Western of Ireland.
													Ilen Valley.
-	124	2,479	1,981	498 Deficiency.	-	Locomotive power and rolling stock supplied by the "Great Southern and Western" Company.						Kanturk and Newmarket.	
													Kilkenny Junction.
													Letterkenny.
													Limavady and Dungiven.
													Limerick and Kerry.
-	10	2,081	1,733	348 Deficiency.	120	4	8	8	28	2	46	Listowel and Ballybunion.	
80	50†	9,296	16,045	6,749	58	6	18	8	112	-	-	138	Londonderry and Lough Swilly.

† Engine Hire.

NAME OF COMPANY.	Length of Line in Miles open on 31st December 1889.	WORKING EXPENDITURE.									
		Maintenance of Way, Works, &c.	Locomotive Power (including Stationary Engines).	Repairs and Renewals of Carriages and Waggon.	Traffic Expenses (Coaching and Merchandise).	General Charges.	Rates and Taxes.	Government Duty.	Compensation for Personal Injuries, &c.	Compensation for Damage and Loss of Goods.	Legal and Parliamentary Expenses.
	No.	£	£	£	£	£	£	£	£	£	£
Midland Great Western of Ireland - - - - - (Including the "Great Northern and Western of Ireland,"	432	53,940	64,407	20,554	60,997	11,925	11,107	-	268	521	1,265
<i>Rathkeale and Newcastle Junction</i> - - -	<i>Worked by the Waterford and Limerick.</i>										
Sligo, Leitrim, and Northern Counties - - -	48	5,352	3,962	674	4,390	452	143	-	-	-	147
<i>Southern</i> - - - - -	<i>Worked by the Waterford and Limerick.</i>										
<i>Tralee and Fenit</i> - - - - -	<i>Worked by the Waterford and Limerick.</i>										
Waterford and Central Ireland, for the year ended 29th September 1889. (Including the "Central Ireland" and "Kilkenny Junction.")	67	7,021	5,203	2,136	4,579	2,308	901	-	-	18	43
Waterford and Limerick - - - - - (Including the "Athenry and Ennis Junction," "Athenry and Trum," "Limerick and Kerry," "Rathkeale and Newcastle Junction," "Southern," and "Tralee and Fenit.")	279	35,602	31,148	12,680	29,963	8,863	6,396	-	150	54	1,743
Waterford and Tramore - - - - -	7	831	1,089	340	575	387	96	-	-	-	-
Waterford and Wexford† - - - - -	9	115	235		103	272	6	-	-	-	-
Waterford, Dungarvan, and Lismore - - - - -	48	6,232	2,855	953	3,222	1,201	192	-	-	5	26
<i>West Donegal</i> - - - - -	<i>Worked by the Finn Valley.</i>										
TOTAL IRELAND - - -	2,645	397,095	406,868	136,098	406,256	85,289	83,358	-	69,375	3,823	8,616
			235								

LIGHT RAILWAYS AUTHORISED UNDER

Bessbrook and Newry Tramway - - - - -	3	99	188	151	281	403	25	-	-	-	-
Carrickfergus Harbour Junction - - - - -	1	31	41	-	40	-	-	-	-	-	-
Cavan, Leitrim, and Roscommon for the year ended 31st October 1889.	48	1,906	2,178	378	2,318	677	76	-	-	7	13
Clogher Valley Tramway for the year ended 30th September 1889.†	37	1,307	3,004	253	1,232	942	36	-	-	16	33
Cork and Muskerry - - - - -	18	1,552	1,816	294	1,153	529	27	-	8	2	70
West Carbery - - - - -	14	940	989	106	421	555	45	-	-	-	-
West Clare for the year ended 31st October 1889 -	27	1,412	1,560	138	1,888	807	63	-	21	4	48
TOTAL LIGHT RAILWAYS - - -	148	7,247	9,726	1,315	7,333	3,913	272	-	29	29	159
GRAND TOTAL IRELAND - - -	2,791	404,342	416,594	137,413	413,589	89,201	83,630	-	69,404	3,852	8,775
			235								

* Including 1,200*l.* for hire and part purchase of rolling stock.

† The line was almost entirely closed for traffic from the 17th May.

‡ The line was opened for traffic in the early part of 1887; the expenditure of the company up to 30th September in that year was 2,178*l.*, and for the twelve months ended the 30th September 1888, 5,463*l.*

Steamboat, Canal, and Harbour Expenses.			Miscellaneous Working Expenditure not included in the foregoing.			TOTAL WORKING EXPENDITURE.			TOTAL RECEIPTS as given in the TRAFFIC RETURNS, No. 2.			NET RECEIPTS.			Proportion per Cent. of Expenditure to Receipts.			ROLLING STOCK on 31st December 1889.							NAME OF COMPANY.
																		CARRIAGES, WAGGONS, TRUCKS, &c.							
																		Locomotives.	Carriages used for the Conveyance of Passengers only.	Other Vehicles attached to Passenger Trains.	Waggons of all kinds used for the Conveyance of Live Stock, Minerals, or General Merchandise.	Any other Carriages or Waggons used on the Railway, not included in the preceding Columns.	Total Number of Vehicles of all descriptions for Conveyance of Passengers, Live Stock, Ballast, &c.		
£	£	£	£	£	£		No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.							
4,544	-	-	229,528	490,637	261,129	47	104	180	179	1,967	108	2,414						Midland Great Western of Ireland.							
																		Rathkeale and Newcastle Junction.							
-	-	1,597*	16,717	15,589	1,128 Deficiency.	107	5	15	2	102	1	120						Sligo, Leitrim, and Northern Counties.							
																		Southern.							
																		Tralee and Fenit.							
-	-	1,345	23,540	43,355	19,806	54	13	28	17	191	-	236						Waterford and Central Ireland.							
-	-	1,630	128,229	207,409	79,180	62	42	73	38	969	2	1,032						Waterford and Limerick.							
-	-	-	3,318	5,917	2,499	57	4	15	1	8	2	26						Waterford and Tramore.							
-	-	-	731	411	320 Deficiency.	-	Rolling stock hired from the "Dublin, Wicklow, and Wexford" Railway Company.												Waterford and Wexford.						
-	-	2,582†	17,268	17,044	224 Deficiency.	101	5	18	3	142	-	163						Waterford, Dungarvan, and Lismore.							
																		West Donegal.							
10,462	13,242	1,620,716	3,008,939	1,388,223		54	658	1,493	864	13,955	336	16,648						TOTAL IRELAND.							

THE TRAMWAYS (IRELAND) ACTS, 1860 to 1881.

-	-	25	1,152	1,354	202	85	25	1	-	-	22	3	26	Bessbrook and Newry Tramway.
-	-	-	112	80	32 Deficiency.	-	-	-	-	-	-	-	-	Carrickfergus Harbour Junction.
-	-	-	7,548	6,767	781 Deficiency.	112	8	12	10	100	6	128	Cavan, Leitrim, and Roscommon.	
-	-	38	6,881	6,343	538 Deficiency.	108	6	13	6	76	2	97	Clogher Valley Tramway.	
-	-	445	5,906	7,440	1,534 Deficiency.	79	4	14	2	33	-	49	Cork and Muskerry.	
-	-	-	3,006	2,428	578 Deficiency.	124	4	6	4	25	21	56	West Carbery.	
-	-	-	5,936	7,847	1,911 Deficiency.	76	4	9	4	53	12	78	West Clare.	
-	-	518	30,541	32,259	1,718	95	28	55	26	309	44	434	TOTAL LIGHT RAILWAYS.	
10,462	13,760	1,651,257	3,041,198	1,389,941	54	686	1,548	890	14,264	380	17,082	GRAND TOTAL IRELAND.		

† Including 1,912*l.* for hire of rolling stock. § Electro-motive carriages.

RAILWAY RETURNS.--1889.

APPENDIX.—SEASON AND PERIODICAL AND WORKMEN'S TICKETS.

RECEIPTS of RAILWAY COMPANIES in ENGLAND and WALES, SCOTLAND, and IRELAND from
FIRST, SECOND, and THIRD CLASS (including Workmen's Weekly Tickets), SEASON
and PERIODICAL TICKETS issued in 1889, and NUMBER of WORKMEN'S DAILY TICKETS
issued by the COMPANIES in the same Year.

NOTE.—The Board of Trade are indebted to the Railway Companies for having
voluntarily supplied the information given in the following Tables.

APPENDIX.—TABLE I.—RECEIPTS from SEASON and PERIODICAL TICKETS in 1889.—ENGLAND AND WALES.

Note.—The Returns for worked or leased lines are included in those of the working Companies.

NAME OF COMPANY.	RECEIPTS from SEASON and PERIODICAL TICKETS, including WORKMEN'S WEEKLY TICKETS.			
	First Class.	Second Class.	Third Class (including Workmen's Weekly Tickets).	TOTAL.
Aylesbury and Buckingham - - - -	£	£	£	£
Barry Dock and Railways - - - -	22	72	137	231
Bishop's Castle - - - -	—	—	—	—
Brecon and Merthyr Tydfil Junction - - -	39	77	5	121
Bristol Port Railway and Pier - - - -	101	70	45	216
Cambrian - - - - (Including leased and worked lines, for names of which see p. 48.)	281	646	200	1,127
Central Wales and Carmarthen Junction - -	—	—	—	—
Cheshire Lines Committee - - - - (Including leased and worked lines, for names of which see p. 48.)	11,484	3,805	13,005	28,294
Cleator and Workington Junction - - - -	39	5	6	50
Cockermouth, Keswick, and Penrith - - -	72	166	171	409
Colne Valley and Halstead - - - -	23	20	—	43
Corris - - - -	—	—	15	15
Dover and Deal (Joint Committee) - - - -	Cannot be given.			
East and West Junction - - - -	8	6	19	33
Eastern and Midlands - - - -	See note, page iii.			
East London (Joint Committee) - - - -	147	379	49	575
Festiniog - - - -	22	62	1,043	1,127
Furness - - - -	1,373	1,375	811	3,559
Garstang and Knot End - - - -	—	—	—	—
Golden Valley - - - -	—	—	1	1
Great Eastern - - - - (Including leased and worked lines, for names of which see p. 50.)	65,980	125,559	334	191,873
Great Marlow - - - -	18	61	—	79
Great Northern - - - - (Including leased and worked lines, for names of which see p. 50.)	37,536	62,489	16,094	116,119
Great Western - - - - (Including leased and worked lines, for names of which see p. 50.)	37,249	56,798	6,638	100,685
Halifax and Ovenden - - - -	80	—	322	402
Hull, Barnsley, and West Riding Junction Railway and Dock	61	60	238	359
Isle of Wight - - - - (Including leased and worked lines, for names of which see p. 52.)	139	384	108	631
Isle of Wight Central - - - - (Including leased and worked lines, for names of which see p. 52.)	243	397	79	719
Lancashire and Yorkshire - - - - (Including leased and worked lines, for names of which see p. 52.)	62,764	28,513	82,918	174,195
Liskeard and Caradon - - - -	—	5	—	5
London and North-Western - - - - (Including leased and worked lines, for names of which see p. 52.)	79,321	41,626	74,688	195,635

APPENDIX.—TABLE I.—RECEIPTS FROM SEASON AND PERIODICAL TICKETS IN 1889.—ENGLAND AND WALES—*cont.*

NAME OF COMPANY.	RECEIPTS FROM SEASON AND PERIODICAL TICKETS, including WORKMEN'S WEEKLY TICKETS.			
	First Class.	Second Class.	Third Class (including Workmen's Weekly Tickets).	TOTAL.
	£	£	£	£
London and South-Western - - - - - (Including leased and worked lines, for names of which see p. 5.)	88,680	67,994	22,544	179,218
London, Brighton, and South Coast - - - - - (Including leased and worked lines, for names of which see p. 52.)	105,985	100,499	1,657	208,141
London, Chatham, and Dover - - - - - (Including leased and worked lines, for names of which see p. 52.)	42,516	48,484	1,074	92,074
Londonderry (Seaham to Sunderland) - - - - -	52	149	—	201
London, Tilbury, and Southend - - - - -	3,702	8,083	—	11,785
Macclesfield Committee - - - - -	75	54	149	278
Manchester and Milford - - - - -	—	37	6	43
Manchester, Sheffield, and Lincolnshire - - - - - (Including leased and worked lines, for names of which see p. 54.)	8,039	3,974	11,188	23,201
Manchester, South Junction, and Altrincham - - - - -	8,723	4,991	10,931	24,645
Maryport and Carlisle - - - - -	372	368	670	1,410
Mawddwy - - - - -	—	5	3	8
Mersey - - - - -	2,293	3,209	—	5,502
Methley Joint - - - - -	29	—	44	73
Metropolitan - - - - - (Including leased and worked lines, for names of which see p. 54.)	17,065	35,036	4,334	56,435
Metropolitan District - - - - - (Including leased and worked lines, for names of which see p. 54.)	15,224	21,165	—	36,389
Metropolitan and Metropolitan District City Lines and Extensions.	—	—	—	—
Midland - - - - - (Including leased and worked lines, for names of which see p. 54.)	57,962	—	81,719	139,681
Midland and South-Western Junction - - - - -	20	48	14	82
Neath and Brecon - - - - -	Cannot be given.			
Northampton and Banbury Junction - - - - -	—	—	—	—
North and South Western Junction - - - - -	—	11	—	11
North-Eastern - - - - - (Including leased and worked lines, for names of which see p. 54.)	28,099	13,098	55,778	96,975
North London - - - - -	18,587	29,807	17,411	65,805
North Staffordshire - - - - - (Including leased and worked lines, for names of which see p. 54.)	2,306	4,322	5,912	12,540
North Wales (narrow gauge) - - - - -	10	3	404	417
Oldham, Ashton-under-Lyne, and Guide Bridge Junction - - - - -	122	111	1,696	1,929
Pembroke and Tenby - - - - -	12	67	43	122
Pontypridd, Caerphilly, and Newport - - - - -	See note, page iii.			
Ravenglass and Eskdale - - - - -	Cannot be given.			
Rhondda and Swansea Bay - - - - -	—	7	21	28
Rhymney - - - - -	205	294	381	880
Seacombe, Hoylake, and Deeside - - - - -	619	2,027	—	2,646
Severn and Wye and Severn Bridge - - - - -	11	—	20	31
Sheffield and Midland Committee - - - - -	1,022	303	2,463	3,788
Somerset and Dorset - - - - -	108	598	169	875
South-Eastern - - - - - (Including leased and worked lines, for names of which see p. 56.)	77,405	57,690	18,827	153,922
Southwold - - - - -	10	—	29	39

APPENDIX.—TABLE I.—RECEIPTS FROM SEASON AND PERIODICAL TICKETS IN 1889.—ENGLAND AND WALES—*cont.*

NAME OF COMPANY.	RECEIPTS FROM SEASON AND PERIODICAL TICKETS, including WORKMEN'S WEEKLY TICKETS.			
	First Class.	Second Class.	Third Class (including Workmen's Weekly Tickets).	TOTAL.
Taff Vale - - - - - (Including leased and worked lines, for names of which see p. 56.)	£ 1,878	£ 2,402	£ 1,941	£ 6,221
Talylyn - - - - -	—	—	—	—
West Lancashire - - - - -	275	67	487	829
West Somerset Mineral - - - - -	—	—	—	—
Wrexham, Mold, and Connah's Quay - - - - - (Including leased and worked lines, for names of which see p. 58.)	—	—	—	—
Total England and Wales for Companies making Returns - - - - -	778,408	727,478	436,841	1,942,727
Add Receipts for Periodical Tickets of all Classes for Companies not making Returns - - - - -	—	—	—	123
TOTAL ENGLAND AND WALES - - - - -	—	—	—	1,942,850

Note.—The following Companies have given the number of equivalent annual tickets of each class, as well as the receipts therefrom.

NAME OF COMPANY.	First Class.	Second Class.	Third Class (including Workmen's Weekly Tickets).	TOTAL.
	No.	No.	No.	No.
Barry Dock and Railways - - - - -	5	9	28	42
Isle of Wight - - - - -	15	70	23	108
Macclesfield Committee - - - - -	24	11	63	98
Manchester, Sheffield, and Lincolnshire - - - - -	823	559	2,837	4,219
Manchester, South Junction, and Altrincham - - - - -	1,066	765	2,260	4,091
North Staffordshire - - - - -	221	693	1,336	2,750
Oldham, Ashton-under-Lyne, and Guidebridge Junction - - - - -	101	108	558	767
Rhymney - - - - -	21	51	130	202
Sheffield and Midland Committee - - - - -	348	118	1,130	1,596
Somerset and Dorset - - - - -	18	80	93	191

APPENDIX.—TABLE I.—RECEIPTS from SEASON and PERIODICAL
TICKETS in 1889.—SCOTLAND.

NAME OF COMPANY.	RECEIPTS from SEASON and PERIODICAL TICKETS, including WORKMEN'S WEEKLY TICKETS.			
	First Class.	Second Class.	Third Class (including Workmen's Weekly Tickets).	TOTAL.
	£	£	£	£
Ayrshire and Wigtownshire - - - - -	42	—	88	130
Caledonian - - - - - (Including leased and worked lines, for names of which see p. 60.)	38,671	52	28,946	67,669
City of Glasgow Union - - - - -	1,692	—	1,401	3,093
Glasgow and South-Western - - - - - (Including leased and worked lines, for names of which see p. 60.)	13,802	—	16,774	30,576
Great North of Scotland - - - - -	5,910	—	6,064	11,974
Highland - - - - -	3,273	—	2,086	5,359
North British - - - - - (Including leased and worked lines, for names of which see p. 60.)	52,098	530	25,866	78,494
Portpatrick and Wigtownshire Joint Committee - - -	126	—	107	233
TOTAL SCOTLAND - - - - -	115,614	582	81,332	197,528

Note.—The following Companies have given the number of equivalent annual tickets of each class, as well as the receipts therefrom.

NAME OF COMPANY.	First Class.	Second Class.	Third Class (including Workmen's Weekly Tickets).	TOTAL.
	No.	No.	No.	No.
Caledonian - - - - -	5,924	12	8,352	14,288
Glasgow and South-Western - - - - -	1,632	—	2,929	4,561

APPENDIX.—TABLE I.—RECEIPTS from SEASON and PERIODICAL
TICKETS in 1889.—IRELAND.

NAME OF COMPANY.	RECEIPTS from SEASON and PERIODICAL TICKETS, including WORKMEN'S WEEKLY TICKETS.			
	First Class.	Second Class.	Third Class (including Workmen's Weekly Tickets).	TOTAL.
	£	£	£	£
Rallycastle - - - - -	—	3	17	20
Belfast and County Down - - - - -	4,567	4,856	—	9,423
Belfast and Northern Counties - - - - - (Including leased and worked lines, for names of which see p. 62.)	2,027	3,639	94	5,760
Cork and Macroom Direct - - - - -	—	56	76	132
Cork, Bandon, and South Coast - - - - - (Including leased and worked lines, for names of which see p. 62.)	27	316	80	423
Cork, Blackrock, and Passage - - - - -	Cannot be given.			
Dublin, Wicklow, and Wexford - - - - - (Including leased and worked lines, for names of which see p. 62.)	9,889	13,295	—	23,184
Dundalk, Newry, and Greenore - - - - -	—	28	4	32
Finn Valley - - - - - (Including leased and worked lines, for names of which see p. 62.)	—	10	6	16
Great Northern of Ireland - - - - - (Including leased and worked lines, for names of which see p. 62.)	2,272	4,663	8	6,943
Great Southern and Western of Ireland - - - - - (Including leased and worked lines, for names of which see p. 62.)	Cannot be given.			
Kanturk and Newmarket - - - - -	—	11	—	11
Listowel and Ballybunion - - - - -	7	—	24	31
Londonderry and Lough Swilly - - - - - (Including leased and worked lines, for names of which see p. 62.)	67	209	50	326
Midland Great Western of Ireland - - - - - (Including leased and worked lines, for names of which see p. 64.)	793	871	—	1,664
Sligo, Leitrim, and Northern Counties - - - - -	—	30	9	39
Waterford and Central Ireland - - - - - (Including leased and worked lines, for names of which see p. 64.)	43	271	479	793
Waterford and Limerick - - - - - (Including leased and worked lines, for names of which see p. 64.)	161	1,198	—	1,359
Waterford and Tramore - - - - -	521	—	—	521
Waterford and Wexford * - - - - -	—	—	17	17
Waterford, Dungarvan, and Lismore - - - - -	39	29	64	132
TOTAL (exclusive of "Cork, Blackrock, and Passage," and "Great Southern and Western") - - - - -	20,413	29,485	928	50,826
LIGHT RAILWAYS.				
Bessbrook and Newry - - - - -	—	17	—	17
Cavan, Leitrim, and Roscommon - - - - -	—	—	—	—
Clogher Valley - - - - -	1	—	8	9
Cork and Muskerry Light, Limited - - - - -	66	—	155	221
West Carbery - - - - -	—	—	—	—
West Clare - - - - -	—	—	5	5
TOTAL IRELAND for Companies making Returns - - - - -	20,480	29,502	1,096	51,078
Add Total Receipts for Periodical Tickets of all Classes for Companies not making Returns - - - - -	—	—	—	4,512
GRAND TOTAL IRELAND - - - - -	—	—	—	55,590

* See note page 64.

**APPENDIX.—TABLE II.—NUMBER of WORKMEN'S DAILY and
WEEKLY TICKETS issued in 1889.**

NAME OF COMPANY.	Number of Workmen's Daily Tickets issued.	Number of Workmen's Weekly Tickets issued.
ENGLAND AND WALES.		
Bristol Port Railway and Pier	63,345	—
Cheshire Lines Committee	49,776	8,268
East London	69,580	—
Festiniog	35,325	—
Furness	—	2,549
Great Eastern	*6,110,339	—
Great Northern	*1,426,719	100,617
Great Western	647,070	—
(Including tickets issued from stations on the Hammersmith and City Joint Line).		
Halifax and Ovenden	20,888	—
Lancashire and Yorkshire	—	156,951
London and North-Western	114,188	175,031
London and South-Western	—	158,738
London, Brighton, and South Coast	1,477,285	—
London, Chatham, and Dover	1,359,072	8,619
London, Tilbury, and Southend	557,037	—
Manchester, Sheffield, and Lincolnshire	3,845	—
Manchester, South Junction, and Altrincham	—	10,668
Maryport and Carlisle	—	2,723
Mersey	655,144	—
Methley Joint Railway	41	—
Metropolitan	1,670,250	—
Metropolitan District	841,495	—
Midland	506,072	—
North-Eastern	935,808	—
North London	—	†350,116
North Staffordshire	—	87,646
Taff Vale	—	12,222
TOTAL ENGLAND AND WALES	16,543,279	1,074,148
SCOTLAND.		
Caledonian	840,449	—
City of Glasgow Union	40,743	—
Glasgow and South-Western	615,475	—
North British	1,920,420	—
TOTAL SCOTLAND	3,417,087	—
IRELAND.		
Great Northern (Ireland)	1,147	—
TOTAL UNITED KINGDOM	19,961,513	1,074,148

NOTE.—The workmen's daily tickets entitle the holders to travel once in each direction between the stations for which they are issued, and the weekly tickets to six journeys in each direction. Both classes of tickets are accounted for in Part II.

* Including tickets issued at a single fare for the double journey.

† See note page 54.

RAILWAY COMPANIES (PASSENGER TRAINS).

RETURN to an Order of the Honourable The House of Commons,
dated 9 August 1889 ;—for,

RETURN “ showing the Running of the PASSENGER TRAINS on the MAIN
LINE and BRANCH LINES of the LONDON, BRIGHTON, AND SOUTH
COAST RAILWAY ; the LONDON, CHATHAM, AND DOVER RAILWAY ; the
LONDON AND SOUTH WESTERN RAILWAY ; and the SOUTH EASTERN
RAILWAY, respectively, for the Year ending 30th day of June 1889 :—

	Year ending June 1889.	
	Number of Trains.	Percentage.
Trains to time - - - - -		
Trains 1 to 5 minutes late - - - - -		
Trains 6 to 10 minutes late - - - - -		
Trains 11 to 15 minutes late - - - - -		
Trains 16 to 20 minutes late - - - - -		
Trains 21 to 25 minutes late - - - - -		
Trains 26 to 30 minutes late - - - - -		
Trains over 30 minutes late - - - - -		

Board of Trade, }
11 February 1890. }

HENRY G. CALCRAFT.

(Mr. Baumann.)

Ordered, by The House of Commons, to be Printed,
13 February 1890.

LONDON:
PRINTED BY HENRY HANSARD AND SON;
AND
Published by EYRE and SPOTTISWOODE, East Harding-street, London, E.C.,
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ADAM and CHARLES BLACK, North Bridge, Edinburgh ;
and HODGES, FIGGIS, and Co., 104, Grafton-street, Dublin.

RETURN showing the Running of the PASSENGER TRAINS on the MAIN LINE and BRANCH LINES of the LONDON, BRIGHTON, AND SOUTH COAST RAILWAY; the LONDON, CHATHAM, AND DOVER RAILWAY; the LONDON AND SOUTH WESTERN RAILWAY; and the SOUTH EASTERN RAILWAY, respectively, for the Year ending 30th day of June 1889.

LONDON, BRIGHTON, AND SOUTH COAST RAILWAY.

RETURN showing the Running of all Passenger Trains on the London, Brighton, and South Coast Railway, during the Three Months ending the 30th day of June 1889.

	Number of Trains.	Percentage.
Trains to time - - - - -	66,174	65·852
„ 1 to 5 minutes late - - - - -	19,353	19·259
„ 6 „ 10 „ - - - - -	9,845	9·797
„ 11 „ 15 „ - - - - -	2,923	2·909
„ 16 „ 20 „ - - - - -	1,064	1·059
„ 21 „ 25 „ - - - - -	498	·495
„ 26 „ 30 „ - - - - -	264	·263
„ over 30 „ - - - - -	368	·366
	100,489	

LONDON, CHATHAM, AND DOVER RAILWAY.

RETURN showing the Running of all Passenger Trains on the London, Chatham, and Dover Railway, during the Three Months ending the 30th day of June 1889.

	Number of Trains.	Percentage.
Trains to time - - - - -	34,776	50·426
„ 1 to 5 minutes late - - - - -	22,292	32·324
„ 6 „ 10 „ - - - - -	7,371	10·688
„ 11 „ 15 „ - - - - -	2,089	3·029
„ 16 „ 20 „ - - - - -	886	1·285
„ 21 „ 25 „ - - - - -	518	·751
„ 26 „ 30 „ - - - - -	293	·425
„ over 30 „ - - - - -	739	1·072
	68,964	

LONDON AND SOUTH WESTERN RAILWAY.

RETURN showing the Running of all Passenger Trains on the London and South Western Railway, during the Three Months ending the 30th day of June 1889.

	Number of Trains.	Percentage.
Trains to time - - - - -	67,523	69·30
„ 1 to 5 minutes late - - - - -	18,081	18·56
„ 6 „ 10 „ - - - - -	5,946	6·11
„ 11 „ 15 „ - - - - -	2,108	2·16
„ 16 „ 20 „ - - - - -	1,898	1·94
„ 21 „ 25 „ - - - - -	755	·77
„ 26 „ 30 „ - - - - -	599	·62
„ over 30 „ - - - - -	523	·54
	97,433	100·00

SOUTH EASTERN RAILWAY.

RETURN showing the Number of Passenger Trains arriving at Destination Late,
for the Month of April 1889.

	Number of Trains.	Percentage.
Trains to time - - - - -	16,355	70·
„ 1 to 5 minutes late - - - - -	3,834	16·4
„ 6 „ 10 „ - - - - -	1,982	8·5
„ 11 „ 15 „ - - - - -	527	2·25
„ 16 „ 20 „ - - - - -	237	1·1
„ 21 „ 25 „ - - - - -	135	·6
„ 26 „ 30 „ - - - - -	95	·4
„ over 30 „ - - - - -	182	·8

RETURN showing the Number of Passenger Trains arriving at Destination Late,
for the Month of May 1889.

	Number of Trains.	Percentage.
Trains to time - - - - -	18,782	73·53
„ 1 to 5 minutes late - - - - -	4,014	15·71
„ 6 „ 10 „ - - - - -	2,086	8·17
„ 11 „ 15 „ - - - - -	408	1·6
„ 16 „ 20 „ - - - - -	135	·53
„ 21 „ 25 „ - - - - -	39	·15
„ 26 „ 30 „ - - - - -	29	·11
„ over 30 „ - - - - -	51	·2

RETURN showing the Number of Passenger Trains arriving at Destination Late,
for the Month of June 1889.

	Number of Trains.	Percentage.
Trains to time - - - - -	13,782	57·14
„ 1 to 5 minutes late - - - - -	4,683	19·41
„ 6 to 10 „ - - - - -	3,216	13·3
„ 11 „ 15 „ - - - - -	1,308	5·42
„ 16 „ 20 „ - - - - -	565	2·34
„ 21 „ 25 „ - - - - -	265	1·09
„ 26 „ 30 „ - - - - -	125	·5
„ over 30 „ - - - - -	175	·7

RETURN showing the Number of Passenger Trains arriving at Destination Late,
for Three Months ending 30th June 1889.

	Number of Trains.	Percentage.
Trains to time - - - - -	48,919	67·
„ 1 to 5 minutes late - - - - -	12,531	17·16
„ 6 „ 10 „ - - - - -	7,284	9·98
„ 11 „ 15 „ - - - - -	2,243	3·07
„ 16 „ 20 „ - - - - -	937	1·3
„ 21 „ 25 „ - - - - -	439	·6
„ 26 „ 30 „ - - - - -	249	·34
„ over 30 „ - - - - -	408	·56

A P P E N D I X.

COPY of CORRESPONDENCE with reference to the Preparation of Return.

LONDON, BRIGHTON, AND SOUTH COAST RAILWAY.

RUNNING OF PASSENGER TRAINS.

Secretary and General Manager's Office,
London Bridge, 6 December 1889.

Sir,

I AM sorry I have not been in a position to send you earlier the return to the Order of the House of Commons of the 9th August, asked for by your letter of the 15th of that month, as, being in some doubt, from the wording of the Order, what was intended to be shown by the return, it was thought desirable to discuss the subject with the managers of the other southern railways, so that our respective returns should be compiled on the same principle.

We have had some difficulty in arranging a meeting for the purpose until recently, but I am now preparing the return upon a basis which, I believe, is implied by the Order, and, as arranged by the other managers, it is being compiled for the three months ending 30th June last.

A very considerable amount of labour and expense must be incurred in preparing the return, even for the three months, and I am, therefore, desirous to express the hope that that period will be sufficient for the purpose for which the return is required, but should you deem it necessary that the return must show the results for the 12 months to the 30th June, in strict compliance with the Order, it shall, of course, be so extended, and forwarded with all possible dispatch.

I am, &c.
(signed) *A. Sarle*,
Secretary and General Manager.

The Assistant Secretary,
Railway Department, Board of Trade.

LONDON, CHATHAM, AND DOVER RAILWAY.

Secretary's Office, Victoria Station,
London, 13 December 1889.

Sir,

I BEG to acknowledge receipt of your letter, No. R.—10,799, on the subject of the return of train delays asked for, pursuant to an Order of the House of Commons, dated the 9th of August last, and, in reply, to say that, in consequence of difficulties having arisen with reference to the basis on which the return should be compiled, it was necessary that the managers of the southern railways should meet to agree upon the principle to be adopted, so that the returns of the four companies might be uniform.

It has not been possible, for many reasons, until recently to arrange such a meeting, but a principle has now been agreed upon, and the return of this Company is being proceeded with as rapidly as possible, for the three months ending the 30th of June 1889.

Inasmuch as the compilation of a return for this period will involve considerable labour and expense, my directors trust that, as there is some doubt as to the meaning of the Order, the return now being prepared for the three months may be accepted as a compliance with the same.

I am, &c.
(signed) *John Morgan*,
Secretary.

The Assistant Secretary,
Railway Department, Board of Trade.

LONDON AND SOUTH WESTERN RAILWAY.

Sir,

General Manager's Office, Waterloo Bridge Station,
London, 2 December 1889.

I BEG to acknowledge the receipt of your letter calling attention to the fact that the return of train delays asked for, in accordance with the Order of the House of Commons, dated the 9th August last, has not yet been supplied.

In reply, I have to state that, for many reasons, it has been impossible, until within the last few days, to arrange a meeting of the managers of the southern railway companies referred to, so as to arrive at a proper understanding whereby the return asked for should be compiled by each company on precisely the same basis.

I need scarcely say that this Company is desirous of complying, as far as possible, with any Order of the House of Commons, but in this case the Order is not quite distinct in its requirements, and various opinions have been expressed as to what, in fact, is intended.

Carrying out, however, what I conceive to be a true compliance with the Order, a return is in course of preparation showing the running, between all stations, of passenger trains on the main line and branches, for the last two or three months of the period mentioned in the Order, and if such return proves to be what is required, it can be extended to a longer period.

Courtenay E. Boyle, Esq., C.B.,
Board of Trade, Whitehall.

I am, &c.
(signed) Chas. Scotter.

SOUTH EASTERN RAILWAY.

RUNNING OF PASSENGER TRAINS.

Sir,

General Manager's Office, London Bridge Station,
6 December 1889.

I REGRET that there should have been some delay in preparing the return ordered by the House of Commons on the 9th August last, and asked for in your letter of the 13th of that month.

It has arisen from the somewhat vague nature of the Order; and I found it necessary to discuss the subject with the managers of the other railways south of the Thames, in order that the return might be compiled, if possible, on a like basis.

We have thoroughly discussed the question, with the view to meet the requirements of the Order, and I am now causing to be prepared a return for the three months ending 30th June last.

No time shall be lost in the preparation of the return, but, as it will involve much labour and expense, I fear it will be some time before I can forward it to you, even for this limited period.

My directors trust that this return will suffice to meet the requirements of the Order, and that the Company will not be called upon to go to the additional labour and expense of providing the return for a longer period.

The Assistant Secretary,
Railway Department, Board of Trade.

I have, &c.
(signed) Myles Fenton,
General Manager.

RAILWAY COMPANIES (PASSENGER
TRAINS).

RETURN showing the Running of the PASSENGER
TRAINS on the MAIN LINE and BRANCH LINES
of the LONDON, BRIGHTON, AND SOUTH COAST
RAILWAY; the LONDON, CHATHAM, AND DOVER
RAILWAY; the LONDON AND SOUTH WESTERN
RAILWAY; and the SOUTH EASTERN RAILWAY,
respectively, for the Year ending 30 June 1889.

(*Mr. Baumann.*)

*Ordered, by The House of Commons, to be Printed,
13 February 1890.*

[*Price 1 d.*]

29. *Under 1 oz.*

H.-20, 2. 90.

PASSENGER TRAINS (CORRESPONDENCE).

RETURN to an Order of the Honourable the House of Commons,
dated 3 March 1890;—*for*,

COPY “of CORRESPONDENCE between the Board of Trade and the London
and South Western, London, Brighton, and South Coast, London,
Chatham, and Dover, and South Eastern Railway Companies, with
reference to the RETURN relating to the Running of PASSENGER TRAINS
on their RAILWAYS.”

Board of Trade, }
March 1890. }

HENRY G. CALCRAFT.

(*Mr. Baumann*)

Ordered, by The House of Commons, to be Printed,
4 March 1890.

LONDON:
PRINTED BY HENRY HANSARD AND SON;
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Board of Trade,
March 1890.

COPY of CORRESPONDENCE between the Board of Trade and the London and South Western, London, Brighton, and South Coast, London, Chatham, and Dover, and South Eastern Railway Companies, with reference to the RETURN relating to the Running of PASSENGER TRAINS on their RAILWAYS.

— No. 1.

Board of Trade to the Secretary of the London and South Western and other Railway Companies.

(Urgent.)

Board of Trade (Railway Department), London, S.W.,
22 February 1890.

Sir,

I AM directed by the Board of Trade to transmit to you the enclosed copy of a question to be put to the President on the 27th instant, with reference to the Returns furnished by your company, in compliance with an Order of the House of Commons, and to request that your Directors will furnish the Board of Trade with the information necessary to enable the President to reply to the question in the House of Commons.

I am, &c.
(signed) *Courtenay Boyle.*

The Secretary of the
London and South Western Railway Company.

A similar letter was written to the London, Brighton, and South Coast, London, Chatham, and Dover, and South Eastern Railway Companies.

Enclosure in No. 1.

HOUSE OF COMMONS.

Notice of Question given on *Friday, 21st February* for *Thursday, 27th February*.

Mr. Baumann.—To ask the President of the Board of Trade, whether he will lay upon the Table all correspondence that has passed between the Board of Trade and the four southern Railway Companies with reference to the Return of the running of their passenger trains recently presented to Parliament :

Whether he will find out if it is the custom of the southern Railway Companies to keep analyses of the punctuality of their trains, abstracted at regular intervals, for the information of the officers and the directors ; and, if not, whether he will ascertain from what sources the figures in the above Return were compiled :

And, in the case of the South Eastern Railway in particular, whether the times of arrival were taken at Cannon-street and Charing Cross respectively, or only as far as London Bridge.

— No. 2. —

London and South Western Railway Company to Board of Trade.

General Manager's Office, Waterloo Station, London, S.E.,
22 February 1890.

Sir,

My attention has been called to the leading article in the "Times" of yesterday's date, having reference to the Return made by the four southern Railway Companies to the Order of the House of Commons of 9th August last, and I regret that an omission on my part has given rise to some misunderstanding.

When I wrote you on 2nd December last, the Return then in course of preparation was intended to show the running "between all stations" of passenger trains on the main line and branches, which the General Managers of all the southern Railway Companies, as I understood, conceived to be the true meaning of the Order; but a day or two later I received a communication stating that the other companies had decided to prepare a Return showing the arrival of passenger trains at *terminal* stations (by "terminal" is meant the ultimate destination of any train), and accordingly the Return alluded to in my letter of 2nd December was altered and prepared on that basis.

I called at the Board of Trade for the purpose of advising you of this alteration, but I was not fortunate enough to find you, and intended to write you, suggesting that the mere introduction of the word "terminal" in my letter was necessary and would be sufficient, but the matter entirely escaped my recollection, and I much regret the inadvertence on my part.

With regard to the suggestion that the period of three months ending 30th June would show specially favourable results, there can be no doubt whatever that this is the fact, but it was thought fair to adopt these three months as the last three months of the period mentioned in the Order, coupled with the explanation contained in my letter, that if the Return was in the form required it could be extended over the remaining nine months.

Courtenay Boyle, Esq., C.B.,
Board of Trade, S.W.

I am, &c.
(signed) *Chas. Scotter.*

— No. 3. —

London and South Western Railway Company to Board of Trade.

Secretary's Office, Waterloo Station, London,
26 February 1890.

Sir,

I BEG to refer to your letter of the 22nd instant (R. 2721), and to state, in reply, that the practice adopted on the London and South Western Railway is to keep daily records of the times of every train at every station throughout its journey.

In the case of a train arriving late at any station inquiry is made as to the cause, and in the event of a train arriving ten minutes late or upwards at its destination, a special report, in addition to the daily record, is made, and it is from these daily records that the figures in the return sent in by this company were compiled.

A return is also made showing the arrival of every passenger train at Waterloo Station, and submitted to the Directors at their fortnightly meetings, but it has never been the practice to keep any analyses of the running of trains, neither has it been deemed necessary, every case of delay being dealt with as it arises.

I am, &c.
(signed) *Fred. J. Macaulay,*
Secretary.

The Assistant Secretary,
Railway Department, Board of Trade, S.W.

— No. 4. —

London, Brighton, and South Coast Railway Company to Board of Trade.

Secretary and General Manager's Office,
London Bridge, S.E.,

Sir,

24 February 1890.

IN reply to the inquiry contained in your letter (2721) of the 22nd instant, I beg to inform you that we keep a daily record of the running of all trains on the railway, showing the arrival of each train at its terminal station, and that all cases of unpunctuality are rigidly inquired into whenever they arise from causes which are not clearly beyond the control of the staff.

We do not abstract the information at particular intervals, as it would serve no useful purpose to do so; but, as some doubts appear to exist of the correctness of the abstract compiled for the three months to 30th June last, for the Return recently made to the Board of Trade, I am desired to say that our books are open to inspection and examination by any person duly authorised by the Board of Trade.

I am, &c.

(signed) *A. Sarle,*

Secretary and General Manager.

The Assistant Secretary,
Railway Department, Board of Trade, S.W.

— No. 5. —

London, Chatham, and Dover Railway Company to Board of Trade.

Secretary's Office, Victoria Station, London, S.W.,

Sir,

26 February 1890.

I BEG to acknowledge the receipt of your letter, R. 2721, of the 22nd instant, enclosing copy of the question to be put to the President of the Board of Trade on the 27th instant, with reference to the Return furnished by this company pursuant to an Order of the House of Commons of the 9th of August 1889; and in reply, to say, as regards that part of the question which relates to this company, that

A record of the running of every train is kept by the guard in charge.

These records are sent day by day to the superintendent of the railway, and are at once examined.

All irregularities are then inquired into, and dealt with.

Under these circumstances, it has not been the practice of this company to make and keep detailed analyses of these records, in view of the large amount of time and labour which would be involved, nor is it considered necessary to do so.

The Return made to the Board of Trade for presentation to Parliament has been prepared with the greatest accuracy possible, and was compiled direct from the guards' records before referred to.

I am, &c.

(signed) *John Morgan,*

The Assistant Secretary,
Railway Department, Board of Trade.

Secretary.

— No. 6. —

South Eastern Railway Company to Board of Trade.

General Manager's Office,

London Bridge Station, S.E., 26 February 1890.

Sir,

IN reply to your letter of the 22nd instant, R. 2721, enclosing copy of a question to be put by Mr. Baumann to the President of the Board of Trade, in reference to the Returns furnished by this company in compliance with the Order of the House of Commons, I beg to state that it is not the custom of the company to keep analyses of the running of the trains; but the guards' reports are daily examined and the delays inquired into. The Returns have been compiled from the guards' reports.

The times of arrival were taken at Cannon-street and Charing Cross respectively, and not at London Bridge.

I am, &c.

(signed)

Myles Fenton,

General Manager.

The Assistant Secretary,

Railway Department, Board of Trade, S.W.

PASSENGER TRAINS (CORRESPONDENCE).

COPY of CORRESPONDENCE between the Board of Trade and the London and South Western, London, Brighton, and South Coast, London, Chatham, and Dover, and London and South Eastern Railway Companies, with reference to the Returns relating to the Running of PASSENGER TRAINS on their RAILWAYS.

(Mr. Baumann)

Ordered, by the House of Commons, to be Printed,
4 March 1890.

[Price 1 d.]

Under 1 oz.

83.

H.-12. 2. 70.

RAILWAYS (TIMES OF TRAINS).

RETURN to an Order of the Honourable The House of Commons,
dated 21 March 1890 ;—for,

RETURN “for alternate Months during the Year 1890, commencing with January, from the Great Northern, Great Eastern, London and North Western, Great Western, Midland, South Eastern, London Chatham and Dover, London Brighton and South Coast, and London and South Western Railway Companies, showing the Arrival at London Stations of all Passenger Trains, as shown in the published Time Tables of the Company, in the Form set out below :”

“The RETURNS to be compiled from the Guards’ Reports or Journals; and London Stations to mean, for the Great Northern, King’s Cross; for the Great Eastern, Liverpool-street: for the London and North Western, Euston: for the Great Western, Paddington; for the Midland, St. Pancras; for the Chatham and Dover, Victoria, St. Paul’s, and Holborn Viaduct; for the South Eastern, Cannon-street and Charing Cross; for the London Brighton and South Coast, London Bridge and Victoria; and for the South Western, Waterloo :—

Percentage to Time and 3 Minutes Late.	Percentage between 3 and 5 Minutes Late.	Percentage between 5 and 10 Minutes Late.	Percentage between 10 and 15 Minutes Late.	Percentage between 15 and 20 Minutes Late.	Percentage between 20 and 25 Minutes Late.	Percentage between 25 and 30 Minutes Late.	Percentage over 30 Minutes Late.	Total Number of Trains.

Board of Trade, }
April 1890. }

HENRY G. CALCRAFT.

(*Mr. Baumann.*)

Ordered, by The House of Commons, to be Printed,
29 April 1890.

LONDON:
PRINTED BY HENRY HANSARD AND SON;
AND
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ADAM and CHARLES BLACK, North Bridge, Edinburgh;
and HODGES, FIGGIS, and Co., 104, Grafton-street, Dublin.

RETURN, for alternate Months during the Year 1890, commencing with January, from the Great Northern, Great Eastern, London and North Western, Great Western, Midland, South Eastern, London Chatham and Dover, London Brighton and South Coast, and London and South Western Railway Companies, showing the Arrival at London Stations of all Passenger Trains, as shown in the published Time Tables of the Company, &c.

RETURNS for the Month of JANUARY 1890.

	Percentage to Time and 3 Minutes Late.	Percentage between 3 and 5 Minutes Late.	Percentage between 5 and 10 Minutes Late.	Percentage between 10 and 15 Minutes Late.	Percentage between 15 and 20 Minutes Late.	Percentage between 20 and 25 Minutes Late.	Percentage between 25 and 30 Minutes Late.	Percentage over 30 Minutes Late..	Total Number of Trains.
GREAT EASTERN -	87.52	6.77	3.94	1.14	.29	.11	.14	.09	8,688
GREAT NORTHERN :									
Suburban trains -	84.894	9.369	4.897	.764	.573	—	—	—	523
Local and through trains to and be- yond King's Cross }	73.693	11.390	10.815	2.587	.754	.143	.215	.395	2,783
'A' Express and through long-dis- tance trains* }	27.878	11.060	26.212	17.424	8.484	5.454	1.363	2.121	660
'B' Scotch trains* -	19.046	3.401	16.326	10.204	13.605	9.523	11.564	16.326	147
†GREAT WESTERN -	70.65	7.38	9.73	5.12	3.76	1.36	.85	1.15	1,993
‡LONDON AND NORTH WESTERN - }	56.33	10.13	12.73	8.06	4.82	2.44	1.64	3.76	1,885
§LONDON AND SOUTH WESTERN - }	55.19	21.21	18.41	3.80	.91	.31	.11	.6	6,501

* In arriving at these proportions, no allowance has been made for detentions resulting from fog, or storm, or waiting for connecting trains of other companies.

In the case of the long-distance trains, marked 'A' and the Scotch trains, marked 'B,' the effect on the averages, of eliminating these causes of disturbance, is shown by the figures repeated below :-

Description of Service.	Percentage to Time and 3 Minutes Late.	Percentage between 3 and 5 Minutes Late.	Percentage between 5 and 10 Minutes Late.	Percentage between 10 and 15 Minutes Late.	Percentage between 15 and 20 Minutes Late.	Percentage between 20 and 25 Minutes Late.	Percentage between 25 and 30 Minutes Late.	Percentage over 30 Minutes Late.	Total Number of Trains.
'A' Long-distance trains	40.909	14.545	26.212	11.363	4.242	1.969	.606	.151	660
'B' Scotch trains -	49.659	10.884	18.367	12.244	4.761	3.401	—	.680	147

† Arrivals at Paddington and Bishop's Road. Sunday trains are included in the Return.

‡ Out of the whole of the trains in the above Return which were upwards of 3 minutes late, 823 in number, 183 were from Carlisle and Holyhead, and their running is dependent respectively upon the arrivals of the connecting trains from Scotland and of the steamers from Ireland.

§ Fog of a dense character prevailed on the 1st, 2nd, 4th, and 28th January.

RETURNS for the Month of January 1890—continued.

	Percentage to Time and 3 Minutes Late.	Percentage between 3 and 5 Minutes Late.	Percentage between 5 and 10 Minutes Late.	Percentage between 10 and 15 Minutes Late.	Percentage between 15 and 20 Minutes Late.	Percentage between 20 and 25 Minutes Late.	Percentage between 25 and 30 Minutes Late.	Percentage over 30 Minutes Late.	Total Number of Trains.
*LONDON BRIGHTON AND SOUTH COAST :									
London Bridge -	85.08	4.85	8.19	1.20	.37	.17	.02	.12	6,997
Victoria - -	69.27	8.27	16.92	3.80	.97	.37	.23	.17	4,680
TOTAL - - -	78.75	6.23	11.68	2.24	.61	.25	.10	.14	11,677
†LONDON CHATHAM AND DOVER :									
Victoria - - -	54.67	16.03	19.37	5.30	1.98	.69	.41	1.52	4,335
Holborn - - -	54.37	14.65	19.19	5.22	1.85	.92	.83	2.93	2,047
St. Paul's - -	57.07	21.21	16.70	3.04	1.09	.48	.36	—	820
‡MIDLAND - - -									
	54.0	12.0	14.0	9.0	4.0	2.0	2.0	3.0	981
§SOUTH EASTERN :									
Charing Cross -	60.71	15.04	17.83	3.53	1.3	.49	.36	.75	5,279
Cannon-street -	62.94	15.88	17.36	2.94	.44	.22	.07	.15	1,360

* Most of the delays beyond 15 minutes arose from the breaking down of an engine in Merstham Tunnel on the 1st of January, and an engine leaving the rails at Victoria on the 27th January.

† On one day there was dense fog, and on three other days it was exceedingly foggy.

‡ The percentage is based upon the running of 945 trains on week-days, and 36 trains on Sundays, making a total during the month of 981 trains arriving at St. Pancras.

§ This Return does not include 1st January, on which day dense fog prevailed, and the Fogging Regulations were in force. The longer delays are chiefly to Continental trains.

RAILWAYS (TIMES OF TRAINS).

RETURN for alternate Months during the Year 1890, commencing with January, from the Great Northern, Great Eastern, London and North Western, Great Western, Midland, South Eastern, London Chatham and Dover, London Brighton and South Coast, and London and South Western Railway Companies, showing the Arrival at London Stations of all Passenger Trains, as shown in the published Time Tables of the Company; &c.

(*Mr. Baumann.*)

*Ordered, by The House of Commons, to be Printed,
29 April 1890*

[*Price 1 d.*]

151. *Under 1 oz.*
H.-20, 3. 90.

RAILWAYS (TIMES OF TRAINS).

RETURN to an Order of the Honourable The House of Commons,
dated 21 March 1890 ;—for,

RETURN “for alternate Months during the Year 1890, commencing with January, from the Great Northern, Great Eastern, London and North Western, Great Western, Midland, South Eastern, London Chatham and Dover, London Brighton and South Coast, and London and South Western Railway Companies, showing the Arrival at London Stations of all Passenger Trains, as shown in the published Time Tables of the Company, in the Form set out below :”

“The RETURNS to be compiled from the Guards’ Reports or Journals; and London Stations to mean, for the Great Northern, King’s Cross; for the Great Eastern, Liverpool-street; for the London and North Western, Euston; for the Great Western, Paddington; for the Midland, St. Pancras; for the Chatham and Dover, Victoria, St. Paul’s, and Holborn Viaduct; for the South Eastern, Cannon-street and Charing Cross; for the London Brighton and South Coast, London Bridge and Victoria; and for the South Western, Waterloo :—

Percentage to Time and 3 Minutes Late.	Percentage between 3 and 5 Minutes Late.	Percentage between 5 and 10 Minutes Late.	Percentage between 10 and 15 Minutes Late.	Percentage between 15 and 20 Minutes Late.	Percentage between 20 and 25 Minutes Late.	Percentage between 25 and 30 Minutes Late.	Percentage over 30 Minutes Late.	Total Number of Trains.

Board of Trade, }
May 1890. }

HENRY G. CALCRAFT.

(*Mr. Baumann.*)

Ordered, by The House of Commons, to be Printed,
29 April 1890.

LONDON:
PRINTED BY HENRY HANSARD AND SON;

AND

Published by EYRE and SPOTTISWOODE, East Harding-street, London, E.C.,
and 32, Abingdon-street, Westminster, S.W. ;
ADAM and CHARLES BLACK, North Bridge, Edinburgh ;
and HODGES, FIGGIS, and Co., 104, Grafton-street, Dublin.

RETURN, for alternate Months during the Year 1890, commencing with January, from the Great Northern, Great Eastern, London and North Western, Great Western, Midland, South Eastern, London Chatham and Dover, London Brighton and South Coast, and London and South Western Railway Companies, showing the Arrival at London Stations of all Passenger Trains, as shown in the published Time Tables of the Company, &c.

RETURNS for the Month of MARCH 1890.

	Percentage to Time and 3 Minutes Late.	Percentage between 3 and 5 Minutes Late.	Percentage between 5 and 10 Minutes Late.	Percentage between 10 and 15 Minutes Late.	Percentage between 15 and 20 Minutes Late.	Percentage between 20 and 25 Minutes Late.	Percentage between 25 and 30 Minutes Late.	Percentage over 30 Minutes Late.	Total Number of Trains.
GREAT EASTERN -	91.25	4.74	2.87	.66	.22	.14	.06	.06	8,507
GREAT NORTHERN :									
Suburban trains -	89.245	6.226	3.396	.566	.566	—	—	—	530
Local and through trains to and be- yond King's Cross }	81.466	9.06	7.556	1.353	.375	.112	.075	—	2,660
'A' Express and through long-dis- tance trains* }	44.341	14.573	25.736	8.062	4.806	1.705	.465	.310	645
'B' Scotch trains*	40.0	9.285	10.0	10.714	10.0	8.571	3.571	7.857	140
†GREAT WESTERN -	82.48	6.14	6.48	2.34	1.39	.86	.05	.26	1,941
‡LONDON AND NORTH WESTERN - }	63.24	10.22	12.79	5.64	3.35	2.01	.55	2.17	1,790
LONDON AND SOUTH WESTERN - }	73.14	13.74	9.78	1.97	.74	.20	.14	.29	6,362

* In arriving at these proportions, no allowance has been made for detentions resulting from fog, or storm, or waiting for connecting trains of other companies.

In the case of the long-distance trains, marked 'A,' and the Scotch trains, marked 'B,' the effect on the averages, of eliminating these causes of disturbance, is shown by the figures repeated below :—

Description of Service.	Percentage to Time and 3 Minutes Late.	Percentage between 3 and 5 Minutes Late.	Percentage between 5 and 10 Minutes Late.	Percentage between 10 and 15 Minutes Late.	Percentage between 15 and 20 Minutes Late.	Percentage between 20 and 25 Minutes Late.	Percentage between 25 and 30 Minutes Late.	Percentage over 30 Minutes Late.	Total Number of Trains.
'A' Long-distance trains	58.294	14.573	19.844	3.410	2.790	.620	.310	.155	645
'B' Scotch trains -	67.857	6.428	12.142	7.857	2.142	1.428	—	2.142	140

† Arrivals at Paddington and Bishop's Road. Sunday trains are included in the Return.

‡ Out of the whole of the trains in the above Return which were upwards of 3 minutes late, 658 in number, 118 were from Carlisle and Holyhead, and their running is dependent respectively upon the arrivals of the connecting trains from Scotland and of the steamers from Ireland.

RETURNS for the Month of March 1890—*continued.*

	Percentage to Time and 3 Minutes Late.	Percentage between 3 and 5 Minutes Late.	Percentage between 5 and 10 Minutes Late.	Percentage between 10 and 15 Minutes Late.	Percentage between 15 and 20 Minutes Late.	Percentage between 20 and 25 Minutes Late.	Percentage between 25 and 30 Minutes Late.	Percentage over 30 Minutes Late.	Total Number of Trains.
LONDON BRIGHTON AND SOUTH COAST :									
London Bridge -	91·78	3·18	4·29	·54	·15	·05	—	·01	6,859
Victoria - -	80·62	6·35	10·83	1·59	·35	·13	·09	·04	4,531
TOTAL - - -	87·31	4·37	6·91	·98	·23	·09	·09	·02	11,440
*LONDON CHATHAM AND DOVER :									
Victoria - -	69·71	12·53	11·55	3·16	1·11	·41	·31	1·18	4,388
Holborn - -	67·4	13·26	11·34	3·06	1·62	·76	·43	2·10	2,089
St. Paul's - -	75·03	11·32	10·35	2·19	·97	·12	—	—	821
Average percentage	69·64	12·60	11·35	3·02	1·24	·48	·31	1·31	7,298
†MIDLAND - - -									
	63·0	12·0	13·0	5·0	3·0	2·0	1·0	1·0	955
‡SOUTH EASTERN :									
Charing Cross -	76·53	10·77	9·27	1·67	·56	·33	·27	·6	5,165
Cannon-street -	74·71	14·00	10·09	·67	·23	·15	·00	·15	1,337

* The greater delays were chiefly to continental trains.

† The percentage is based upon the running of 910 trains on week-days, and 45 trains on Sundays, making a total during the month of 955 trains arriving at St. Pancras.

‡ This Return does not include 4th March, on which day dense fog prevailed, and the Fogging Regulations were in force. The longer delays are chiefly to Continental trains.

RAILWAYS (TIMES OF TRAINS).

RETURN for alternate Months during the Year 1890, commencing with January, from the Great Northern, Great Eastern, London and North Western, Great Western, Midland, South Eastern, London Chatham and Dover, London Brighton and South Coast, and London and South Western Railway Companies, showing the Arrival at London Stations of all Passenger Trains, as shown in the published Time Tables of the Company; &c.

(*Mr. Baumann.*)

*Ordered, by The House of Commons, to be Printed,
29 April 1890.*

[*Price 3 d.*]

151—1.

H.—22, 5, 90

Under 1 oz.

RAILWAYS (TIMES OF TRAINS).

RETURN to an Order of the Honourable The House of Commons,
dated 21 March 1890 ;—for,

RETURN “for alternate Months during the Year 1890, commencing with January, from the Great Northern, Great Eastern, London and North Western, Great Western, Midland, South Eastern, London Chatham and Dover, London Brighton and South Coast, and London and South Western Railway Companies, showing the Arrival at London Stations of all Passenger Trains, as shown in the published Time Tables of the Company, in the Form set out below :”

“The RETURNS to be compiled from the Guards’ Reports or Journals ; and London Stations to mean, for the Great Northern, King’s Cross ; for the Great Eastern, Liverpool-street ; for the London and North Western, Euston ; for the Great Western, Paddington ; for the Midland, St. Pancras ; for the Chatham and Dover, Victoria, St. Paul’s, and Holborn Viaduct ; for the South Eastern, Cannon-street and Charing Cross ; for the London Brighton and South Coast, London Bridge and Victoria ; and for the South Western, Waterloo :—

Percentage to Time and 3 Minutes Late.	Percentage between 3 and 5 Minutes Late.	Percentage between 5 and 10 Minutes Late.	Percentage between 10 and 15 Minutes Late.	Percentage between 15 and 20 Minutes Late.	Percentage between 20 and 25 Minutes Late.	Percentage between 25 and 30 Minutes Late.	Percentage over 30 Minutes Late.	Total Number of Trains.

Board of Trade, }
June 1890. }

HENRY G. CALCRAFT.

(Mr. Baumann.)

Ordered, by The House of Commons, to be Printed,
29 April 1890.

LONDON:
PRINTED BY HENRY HANSARD AND SON;

AND
Published by EYRE and SPOTTISWOODE, East Harding-street, London E.C.,
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RETURN, for alternate Months during the Year 1890, commencing with January, from the Great Northern, Great Eastern, London and North Western, Great Western, Midland, South Eastern, London Chatham and Dover, London Brighton and South Coast, and London and South Western Railway Companies, showing the Arrival at London Stations of all Passenger Trains, as shown in the published Time Tables of the Company, &c.

RETURNS for the Month of MAY 1890.

	Percentage to Time and 3 Minutes Late.	Percentage between 3 and 5 Minutes Late.	Percentage between 5 and 10 Minutes Late.	Percentage between 10 and 15 Minutes Late.	Percentage between 15 and 20 Minutes Late.	Percentage between 20 and 25 Minutes Late.	Percentage between 25 and 30 Minutes Late.	Percentage over 30 Minutes Late.	Total Number of Trains.
*GREAT EASTERN	88.73	5.72	3.72	1.04	.38	.13	.08	.20	8,396
GREAT NORTHERN :									
Suburban trains	90.791	5.709	3.314	—	.184	—	—	—	543
Local and through trains to and be- yond King's Cross	83.261	8.333	6.824	.933	.431	.108	.108	—	2,784
'A' Express and through long-dis- tance trains †	39.221	12.275	21.856	10.479	8.333	2.844	2.544	2.395	668
'B' Scotch trains †	28.671	5.594	18.181	9.09	16.783	8.391	4.895	8.391	143
†GREAT WESTERN	68.42	7.29	12.27	4.88	2.71	1.56	1.06	1.81	1,994
§LONDON AND NORTH WESTERN	65.68	8.69	12.39	6.29	3.78	1.45	.94	.78	1,795
LONDON AND SOUTH WESTERN	63.31	14.92	14.69	3.59	1.59	.67	.46	.77	6,596

* Whit Monday is excluded from this Return because on that day the ordinary suburban train service was suspended, and the traffic worked by special trains.

† In arriving at these proportions, no allowance has been made for detentions resulting from fog, or storm, or waiting for connecting trains of other companies.

In the case of the long-distance trains, marked 'A,' and the Scotch trains, marked 'B,' the effect on the averages, of eliminating these causes of disturbance, is shown by the figures repeated below :—

Description of Service.	Percentage to Time and 3 Minutes Late.	Percentage between 3 and 5 Minutes Late.	Percentage between 5 and 10 Minutes Late.	Percentage between 10 and 15 Minutes Late.	Percentage between 15 and 20 Minutes Late.	Percentage between 20 and 25 Minutes Late.	Percentage between 25 and 30 Minutes Late.	Percentage over 30 Minutes Late.	Total Number of Trains.
'A' Long-distance trains	55.988	11.676	16.017	7.335	3.742	2.245	1.796	1.197	668
'B' Scotch trains	66.433	5.594	13.983	8.391	3.496	2.097	—	—	143

† Arrivals at Paddington and Bishop's Road. Sunday trains are included in the Return, and it also covers the Whitsuntide holidays.

§ Out of the whole of the trains in the above Return which were upwards of 3 minutes late, 616 in number, 120 were from Carlisle and Holyhead, and their running is dependent respectively upon the arrivals of the connecting trains from Scotland and of the steamers from Ireland. This Return includes Whitsuntide week, during which the trains were somewhat less regular than usual, consequent upon the pressure of the holiday traffic.

|| All up-trains on both Main and Windsor Lines are delayed by signals running cautiously over that portion of the line which is being widened from Nine Elms to Waterloo.

RETURNS for the Month of May 1890—continued.

	Percentage to Time and 3 Minutes Late.	Percentage between 3 and 5 Minutes Late.	Percentage between 5 and 10 Minutes Late.	Percentage between 10 and 15 Minutes Late.	Percentage between 15 and 20 Minutes Late.	Percentage between 20 and 25 Minutes Late.	Percentage between 25 and 30 Minutes Late.	Percentage over 30 Minutes Late.	Total Number of Trains.
LONDON BRIGHTON AND SOUTH COAST :									
London Bridge -	89·8	2·97	5·33	1·06	·5	·16	·09	·09	6,399
Victoria - -	76·43	7·02	12·0	3·09	·82	·30	·14	·2	4,374
TOTAL - - -	84·38	4·62	8·04	1·88	·63	·21	·11	·13	10,773
*LONDON CHATHAM AND DOVER :									
Victoria :									
Long distance - -	58·20	12·70	15·64	5·97	4·07	1·99	·56	·85	1,055
Local and Metropolitan	71·68	12·32	11·34	3·38	·83	·14	·11	·14	3,366
Continental - -	32·69	4·80	9·13	6·73	9·13	7·69	8·17	21·63	208
Average of all into Victoria - - - }	66·86	12·07	12·22	4·12	1·94	·90	·58	1·27	4,629
Holborn :									
Long distance - -	47·52	16·55	19·78	8·92	3·22	2·36	·86	·75	930
Local and Metropolitan	87·97	5·40	4·07	1·83	·50	·10	- nil -	·10	981
Continental - -	28·23	3·52	8·23	8·82	12·94	6·47	7·64	24·11	170
Average of all into Holborn - - - }	65·01	10·23	11·43	5·57	2·73	1·63	1·00	2·35	2,081
St. Paul's :									
Long distance - -	49·07	18·51	15·74	11·11	3·70	·92	·92	- nil -	108
Local and Metropolitan	74·67	13·88	9·91	1·31	·71	- nil -	- nil -	- nil -	837
Continental - -	- nil -	- nil -	- nil -	- nil -	- nil -	- nil -	- nil -	- nil -	- nil.
Average of all into St. Paul's - - - }	71·74	13·96	10·58	2·43	1·05	·10	·10	- nil -	945
Average of all trains into the City Sta- tions - - - }	67·11	11·40	11·17	4·59	2·21	1·15	·72	1·61	3,026
Average of all trains into all three Sta- tions - - - }	66·96	11·80	11·80	4·31	2·05	1·00	·64	1·41	7,655
MIDLAND - - -									
	56·50	10·13	14·32	7·89	4·91	2·67	1·43	2·15	977
†SOUTH EASTERN :									
Charing Cross -	74·38	10·77	9·43	2·46	·94	·52	·55	·95	5,422
Cannon-street -	78·3	11·99	8·5	·76	·075	·075	—	·3	1,318
‡London Bridge -	88·06	5·9	4·06	1·05	·41	·14	·15	·23	6,458

* Long distance trains refer to Main Line trains from beyond *Bickley*. The majority of the heavier delays to long distance and local trains took place at Whitsuntide (May 24th, 25th, 26th, and 27th).

† The company point out that the Whitsuntide holidays occurred during the month.

‡ These are the percentages of the arrivals at London Bridge of the trains which call at that station.

RAILWAYS (TIMES OF TRAINS).

RETURN for alternate Months during the Year 1890, commencing with January, from the Great Northern, Great Eastern, London and North Western, Great Western, Midland, South Eastern, London Chatham and Dover, London Brighton and South Coast, and London and South Western Railway Companies, showing the Arrival at London Stations of all Passenger Trains, as shown in the published Time Tables of the Company; &c.

(*Mr. Baumann.*)

*Ordered, by The House of Commons, to be Printed,
29 April 1890.*

[*Price ½ d.*]

151—II.

H. - 6. 7. 90.

Under 1 oz.

RAILWAYS (TIMES OF TRAINS).

RETURN to an Order of the Honourable The House of Commons,
dated 21 March 1890 ;—for,

RETURN “for alternate Months during the Year 1890, commencing with January, from the Great Northern, Great Eastern, London and North Western, Great Western, Midland, South Eastern, London Chatham and Dover, London Brighton and South Coast, and London and South Western Railway Companies, showing the Arrival at London Stations of all Passenger Trains, as shown in the published Time Tables of the Company, in the Form set out below :”

“The RETURNS to be compiled from the Guards’ Reports or Journals ; and London Stations to mean, for the Great Northern, King’s Cross ; for the Great Eastern, Liverpool-street ; for the London and North Western, Euston ; for the Great Western, Paddington ; for the Midland, St. Pancras ; for the Chatham and Dover, Victoria, St. Paul’s, and Holborn Viaduct ; for the South Eastern, Cannon-street and Charing Cross ; for the London Brighton and South Coast, London Bridge and Victoria ; and for the South Western, Waterloo :—

Percentage to Time and 3 Minutes Late.	Percentage between 3 and 5 Minutes Late.	Percentage between 5 and 10 Minutes Late.	Percentage between 10 and 15 Minutes Late.	Percentage between 15 and 20 Minutes Late.	Percentage between 20 and 25 Minutes Late.	Percentage between 25 and 30 Minutes Late.	Percentage over 30 Minutes Late.	Total Number of Trains.

Board of Trade, }
August 1890. }

HENRY G. CALCRAFT.

(*Mr. Baumann.*)

*Ordered, by The House of Commons, to be Printed,
29 April 1890.*

LONDON:
PRINTED BY HENRY HANSARD AND SON;
AND
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RETURNS for the Month of July 1890.

	Percentage to Time and 3 Minutes Late.	Percentage between 3 and 5 Minutes Late.	Percentage between 5 and 10 Minutes Late.	Percentage between 10 and 15 Minutes Late.	Percentage between 15 and 20 Minutes Late.	Percentage between 20 and 25 Minutes Late.	Percentage between 25 and 30 Minutes Late.	Percentage over 30 Minutes Late.	Total Number of Trains.
GREAT EASTERN -	74·32	9·83	9·15	3·54	1·59	·77	·40	·40	9,113
GREAT NORTHERN :									
Suburban trains -	69·44	12·32	10·56	3·84	2·4	·96	·16	·32	625
Local and through trains to and beyond King's Cross }	73·496	11·595	10·442	2·232	1·476	·252	·288	·216	2,777
'A' Express and through long-distance trains* }	32·335	10·628	23·952	14·221	8·083	4·191	3·892	2·694	668
'B' Scotch trains* -	7·762	1·369	8·219	7·305	9·589	7·762	9·589	48·401	219
†GREAT WESTERN -	64·95	8·99	13·04	6·21	3·55	1·49	·70	1·07	2,269
‡LONDON AND NORTH WESTERN - - }	63·23	8·28	12·41	6·23	3·88	1·94	1·26	2·78	1,909
LONDON AND SOUTH WESTERN - - }	60·36	7·42	19·10	6·45	3·00	1·69	·90	1·08	6,695

* In arriving at these proportions, no allowance has been made for detentions resulting from fog, or storm, or waiting for connecting trains of other companies.

In the case of the long-distance trains, marked 'A,' and the Scotch trains, marked 'B,' the effect on the averages, of eliminating these causes of disturbance, is shown by the figures repeated below :—

Description of Service.	Percentage to Time and 3 Minutes Late.	Percentage between 3 and 5 Minutes Late.	Percentage between 5 and 10 Minutes Late.	Percentage between 10 and 15 Minutes Late.	Percentage between 15 and 20 Minutes Late.	Percentage between 20 and 25 Minutes Late.	Percentage between 25 and 30 Minutes Late.	Percentage over 30 Minutes Late.	Total Number of Trains.
'A' Long-distance trains	45·209	12·125	20·658	10·778	4·790	2·245	2·694	1·497	668
'B' Scotch trains -	56·164	12·328	14·611	6·392	4·109	3·196	·913	2·283	219

† Arrivals at Paddington and Bishop's Road. Sunday trains are included in the Return.

‡ Out of the whole of the trains in the above Return which were upwards of 3 minutes late, 702 in number, 172 were from Carlisle and Holyhead, and their running is dependent respectively upon the arrivals of the connecting trains from Scotland and of the steamers from Ireland.

RETURNS for the Month of July 1890—continued.

	Percentage to Time and 3 Minutes Late.	Percentage between 3 and 5 Minutes Late.	Percentage between 5 and 10 Minutes Late.	Percentage between 10 and 15 Minutes Late.	Percentage between 15 and 20 Minutes Late.	Percentage between 20 and 25 Minutes Late.	Percentage between 25 and 30 Minutes Late.	Percentage over 30 Minutes Late.	Total Number of Trains.
*LONDON BRIGHTON AND SOUTH COAST :									
London Bridge -	70.98	5.6	14.67	4.58	1.95	1.18	.23	.81	7,135
Victoria - -	52.87	7.78	22.23	8.93	3.93	1.93	1.07	1.26	4,759
TOTAL - - -	63.73	6.47	17.69	6.32	2.75	1.48	.56	1.00	11,894
LONDON CHATHAM AND DOVER :									
Victoria :									
Long distance - -	33.85	12.60	23.91	12.85	7.11	4.54	1.63	3.51	1,167
Local and Metropolitan	52.29	14.44	18.46	7.87	3.57	1.45	.90	1.02	3,331
Continental - -	25.83	5.49	17.03	11.54	9.34	2.20	3.85	24.72	182
Average of all into Victoria - - }	46.67	13.63	19.77	9.25	4.67	2.24	1.20	2.57	4,680
Holborn :									
Long distance - -	21.74	13.05	24.57	17.11	10.49	6.52	2.83	3.69	1,058
Local and Metropolitan	68.01	11.97	13.25	4.31	1.47	.69	.10	.20	1,019
Continental - -	12.64	9.34	15.93	12.64	8.24	9.34	4.40	27.47	182
Average of all into Holborn - - }	41.87	12.26	18.77	10.98	6.24	4.12	1.73	4.03	2,259
St. Paul's :									
Long distance - -	23.15	14.81	34.26	14.81	6.48	3.70	1.86	.93	108
Local and Metropolitan	49.02	17.32	21.95	7.44	2.44	1.22	.24	.37	820
Average of all into St. Paul's - - }	46.01	17.03	23.38	8.30	2.91	1.51	.43	.43	928
Average percentage of all trains into the two City Stations - - }	43.08	13.65	20.11	10.20	5.27	3.36	1.35	2.98	3,187
Average percentage of all trains to all three Stations - - - }	45.21	13.64	19.91	9.64	4.92	2.69	1.26	2.73	7,867
MIDLAND - - -	41.17	13.52	21.41	10.15	5.71	2.23	1.46	4.35	1,035
SOUTH EASTERN :									
Cannon-street -	53.3	17.62	19.83	5.95	1.54	.81	.22	.73	1,362
Charing Cross -	58.84	11.9	16.03	6.22	2.91	1.6	.73	1.77	5,639
†London Bridge -	76.69	8.88	9.1	2.9	1.09	.58	.23	.53	6,697

* A violent storm on the 17th, which flooded the line in various places, and seriously affected the working of the telegraph instruments, also the very heavy general and excursion traffic during the month, impeded the usual punctual running of the trains.

† These are the percentages of the arrivals at London Bridge of the trains which call at that station.

RAILWAYS (TIMES OF TRAINS).

RETURN for alternate Months during the Year 1890, commencing with January, from the Great Northern, Great Eastern, London and North Western, Great Western, Midland, South Eastern, London Chatham and Dover, London Brighton and South Coast, and London and South Western Railway Companies, showing the Arrival at London Stations of all Passenger Trains, as shown in the published Time Tables of the Company; &c.

(*Mr. Baumann.*)

*Ordered, by The House of Commons, to be Printed,
29 April 1890.*

[*Price 3 d.*]

151—III.

Under 1 oz.
H.—II. 3. 90.

RAILWAYS (TIMES OF TRAINS).

RETURN to an Order of the Honourable The House of Commons,
dated 21 March 1890 ;—for,

RETURN “for alternate Months during the Year 1890, commencing with January, from the Great Northern, Great Eastern, London and North Western, Great Western, Midland, South Eastern, London Chatham and Dover, London Brighton and South Coast, and London and South Western Railway Companies, showing the Arrival at London Stations of all Passenger Trains, as shown in the published Time Tables of the Company, in the Form set out below :”

“The RETURNS to be compiled from the Guards’ Reports or Journals ; and London Stations to mean, for the Great Northern, King’s Cross ; for the Great Eastern, Liverpool-street ; for the London and North Western, Euston ; for the Great Western, Paddington ; for the Midland, St. Pancras ; for the Chatham and Dover, Victoria, St. Paul’s, and Holborn Viaduct ; for the South Eastern, Cannon-street and Charing Cross ; for the London Brighton and South Coast, London Bridge and Victoria ; and for the South Western, Waterloo :—

Percentage to Time and 3 Minutes Late.	Percentage between 3 and 5 Minutes Late.	Percentage between 5 and 10 Minutes Late.	Percentage between 10 and 15 Minutes Late.	Percentage between 15 and 20 Minutes Late.	Percentage between 20 and 25 Minutes Late.	Percentage between 25 and 30 Minutes Late.	Percentage over 30 Minutes Late.	Total Number of Trains.

Board of Trade, }
October 1890. }

HENRY G. CALCRAFT.

(*Mr. Baumann.*)

Ordered, by The House of Commons, to be Printed,
29 April 1890.

LONDON:
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RETURNS for the Month of SEPTEMBER 1890.

	Percentage to Time and 3 Minutes Late.	Percentage between 3 and 5 Minutes Late.	Percentage between 5 and 10 Minutes Late.	Percentage between 10 and 15 Minutes Late.	Percentage between 15 and 20 Minutes Late.	Percentage between 20 and 25 Minutes Late.	Percentage between 25 and 30 Minutes Late.	Percentage over 30 Minutes Late.	Total Number of Trains.
GREAT EASTERN -	70·79	11·46	10·25	3·73	1·51	·82	·51	·93	8,801
GREAT NORTHERN :									
Suburban trains -	75·617	13·179	6·095	2·141	1·317	·494	·494	·658	607
Local and through trains to and beyond King's Cross }	72·631	11·606	9·921	2·957	1·385	·673	·262	·561	2,671
'A' Express and through long-distance trains * }	17·519	11·007	22·015	13·953	6·201	4·651	2·945	6·821	645
'B' Scotch trains *	2·803	·934	2·336	4·205	6·542	7·943	7·943	67·289	214
†GREAT WESTERN -	55·68	6·46	11·63	5·95	6·55	4·35	3·98	5·40	2,184
‡LONDON AND NORTH WESTERN - }	53·19	9·54	12·75	8·12	4·8	3·27	2·94	5·39	1,835
LONDON AND SOUTH WESTERN - }	63·27	6·62	17·06	6·01	2·96	1·79	·86	1·43	6,484

* In arriving at these proportions, no allowance has been made for detentions resulting from fog, or storm, or waiting for connecting trains of other companies.

In the case of the long distance trains, marked 'A,' and the Scotch trains, marked 'B,' the effect on the averages, of eliminating these causes of disturbance, is shown by the figures repeated below :—

Description of Service.	Percentage to Time and 3 Minutes Late.	Percentage between 3 and 5 Minutes Late.	Percentage between 5 and 10 Minutes Late.	Percentage between 10 and 15 Minutes Late.	Percentage between 15 and 20 Minutes Late.	Percentage between 20 and 25 Minutes Late.	Percentage between 25 and 30 Minutes Late.	Percentage over 30 Minutes Late.	Total Number of Trains.
'A' Long-distance trains	32·403	11·007	22·015	13·953	6·201	4·651	2·945	6·821	645
'B' Scotch trains -	44·391	7·476	16·355	11·682	7·476	7·476	2·803	9·323	214

† Arrivals at Paddington and Bishop's Road. Sunday trains are included in the Return.

‡ Out of the whole of the trains in the above Return which were upwards of 3 minutes late, 859 in number, 252 were from Carlisle and Holyhead, and their running is dependent respectively upon the arrivals of the connecting trains from Scotland and of the steamers from Ireland.

RETURNS for the Month of September 1890—continued.

	Percentage to Time and 3 Minutes Late.	Percentage between 3 and 5 Minutes Late.	Percentage between 5 and 10 Minutes Late.	Percentage between 10 and 15 Minutes Late.	Percentage between 15 and 20 Minutes Late.	Percentage between 20 and 25 Minutes Late.	Percentage between 25 and 30 Minutes Late.	Percentage over 30 Minutes Late.	Total Number of Trains.
LONDON BRIGHTON AND SOUTH COAST:									
London Bridge -	74.42	5.09	12.31	4.20	2.04	1.01	.56	.37	6,961
Victoria - -	51.14	6.98	23.46	9.34	4.33	2.26	1.3	1.19	4,687
TOTAL - - -	65.05	5.85	16.79	6.28	2.96	1.51	.86	.70	11,648
LONDON CHATHAM AND DOVER:									
Victoria - -	52.34	14.13	16.89	7.67	3.47	1.72	1.11	2.67	4,524
Holborn - -	53.11	13.32	15.29	6.81	4.37	1.71	1.81	3.58	3,101
St. Paul's - -	53.75	19.38	18.5	6.17	1.21	.55	.33	.11	908
									8,533
Of the above Percentages, Continental trains represent as follows:—									
Victoria - -	.93	.22	.29	.2	.11	.11	.29	1.74	—
Holborn - -	.74	.39	.61	.32	.19	.16	.42	2.52	—
* MIDLAND - - -	33.72	8.43	19.88	13.32	7.91	5.72	3.74	7.28	961
SOUTH EASTERN:									
Charing Cross -	58.43	11.92	14.78	5.96	3.31	2.00	1.26	2.34	5,453
Cannon-street -	60.32	16.19	17.69	3.39	1.44	.75	.15	.07	1,328
London Bridge -	77.21	8.52	8.23	3.33	1.06	.87	.4	.33	6,433

* September 15th not included, as all the Moorgate-street trains ran into St. Pancras on this date, in consequence of the fire at Farringdon-street, on the Metropolitan Railway, which seriously disorganised the working.

RAILWAYS (TIMES OF TRAINS).

RETURN for alternate Months during the Year 1890, commencing with January, from the Great Northern, Great Eastern, London and North Western, Great Western, Midland, South Eastern, London Chatham and Dover, London Brighton and South Coast, and London and South Western Railway Companies, showing the Arrival at London Stations of all Passenger Trains, as shown in the published Time Tables of the Company; &c.

(*Mr. Baumann.*)

*Ordered, by The House of Commons, to be Printed,
29 April 1890.*

[*Price 1d.*]

151—IV.

H.—12. 2. 91.

Under 1 oz.

RAILWAYS. (TIMES OF TRAINS).

RETURN to an Order of the Honourable The House of Commons,
dated 21 March 1890 ;—for,

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“The RETURNS to be compiled from the Guards’ Reports or Journals ; and London Stations to mean, for the Great Northern, King’s Cross ; for the Great Eastern, Liverpool-street ; for the London and North Western, Euston ; for the Great Western, Paddington ; for the Midland, St. Pancras ; for the Chatham and Dover, Victoria, St. Paul’s, and Holborn Viaduct ; for the South Eastern, Cannon-street and Charing Cross ; for the London Brighton and South Coast, London Bridge and Victoria ; and for the South Western, Waterloo :—

Percentage to Time and 3 Minutes Late.	Percentage between 3 and 5 Minutes Late.	Percentage between 5 and 10 Minutes Late.	Percentage between 10 and 15 Minutes Late.	Percentage between 15 and 20 Minutes Late.	Percentage between 20 and 25 Minutes Late.	Percentage between 25 and 30 Minutes Late.	Percentage over 30 Minutes Late.	Total Number of Trains.

Board of Trade, }
December 1890. }

HENRY G. CALCRAFT.

(*Mr. Baumann.*)

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RETURNS for the Month of NOVEMBER 1890.

	Percentage to Time and 3 Minutes Late.	Percentage between 3 and 5 Minutes Late.	Percentage between 5 and 10 Minutes Late.	Percentage between 10 and 15 Minutes Late.	Percentage between 15 and 20 Minutes Late.	Percentage between 20 and 25 Minutes Late.	Percentage between 25 and 30 Minutes Late.	Percentage over 30 Minutes Late.	Total Number of Trains.
GREAT EASTERN -	80.40	9.16	7.06	2.12	.69	.30	.14	.13	8,315
GREAT NORTHERN :									
Suburban trains -	72.916	12.5	8.901	2.462	.946	.946	.378	.946	528
Local and through trains to and beyond King's Cross } -	74.906	10.919	9.611	3.029	.863	.299	.149	.224	2,674
'A' Express and through long-distance trains* - } -	85.016	13.131	21.410	13.468	8.080	2.356	1.683	1.851	594
'B' Scotch trains* -	8.074	5.59	6.832	13.043	12.422	6.832	8.074	39.13	161
†GREAT WESTERN -	64.35	8.62	12.34	6.17	3.47	2.09	1.58	1.38	1,961
‡LONDON AND NORTH WESTERN - -	51.73	9.24	16.23	7.05	5.05	3.59	2.61	4.50	1,645
LONDON AND SOUTH WESTERN - -	67.53	7.48	17.57	4.57	1.59	.72	.22	.32	6,234

* In arriving at these proportions, no allowance has been made for detentions resulting from fog, or storm, or waiting for connecting trains of other companies.

In the case of the long-distance trains, marked 'A,' and the Scotch trains, marked 'B,' the effect on the averages, of eliminating these causes of disturbance, is shown by the figures repeated below.

Description of Service.	Percentage to Time and 3 Minutes Late.	Percentage between 3 and 5 Minutes Late.	Percentage between 5 and 10 Minutes Late.	Percentage between 10 and 15 Minutes Late.	Percentage between 15 and 20 Minutes Late.	Percentage between 20 and 25 Minutes Late.	Percentage between 25 and 30 Minutes Late.	Percentage over 30 Minutes Late.	Total Number of Trains.
'A' Long-distance trains	52.861	12.962	19.528	9.259	3.198	.673	.841	.673	594
'B' Scotch trains -	60.869	7.453	15.527	9.316	3.105	1.242	.621	1.863	161

† Arrivals at Paddington and Bishop's Road. Sunday trains are included in the Return. Four trains on the 11th November, which were seriously delayed by the collision at Norton Fitzwarren, are omitted from the Return.

‡ Out of the whole of the trains in the above Return which were upwards of 3 minutes late, 794 in number, 160 were from Carlisle and Holyhead, and their running is dependent respectively upon the arrivals of the connecting trains from Scotland and of the steamers from Ireland.

RETURNS for the Month of November 1890—*continued.*

	Percentage to Time and 3 Minutes Late.	Percentage between 3 and 5 Minutes Late.	Percentage between 5 and 10 Minutes Late.	Percentage between 10 and 15 Minutes Late.	Percentage between 15 and 20 Minutes Late.	Percentage between 20 and 25 Minutes Late.	Percentage between 25 and 30 Minutes Late.	Percentage over 30 Minutes Late.	Total Number of Trains.
* LONDON BRIGHTON AND SOUTH COAST :									
London Bridge -	74.57	6.39	13.21	3.67	1.15	.51	.22	.23	6,649
Victoria - -	59.06	8.07	21.64	7.00	2.65	.97	.39	.22	4,533
TOTAL - - -	68.28	7.07	16.63	5.02	1.76	.70	.29	.25	11,182
† LONDON CHATHAM AND DOVER :									
Victoria - -	54.85	14.54	18.16	5.90	2.28	1.16	.93	2.18	4,306
Holborn - -	45.03	14.8	19.94	8.25	3.54	2.36	1.27	4.81	2,121
St. Paul's - -	55.87	22.25	17.06	3.21	.99	.5	.00	.12	809
									7,236
Of the above Percentages, Continental trains represent as follows :—									
Victoria - -	.93	.23	.56	.32	.37	.14	.3	1.18	—
Holborn - -	1.13	.71	.71	.94	.66	.8	.38	2.59	—
MIDLAND - - -	40.92	10.92	20.72	10.92	6.30	2.90	2.16	5.16	970
‡ SOUTH-EASTERN :									
Charing Cross -	61.75	14.19	14.89	5.03	1.83	.71	.63	.97	4,638
Cannon-street -	56.94	18.01	20.33	3.73	1.33	.00	.08	.18	1,127
London Bridge -	79.27	9.86	7.81	1.5	.76	.35	.18	.27	5,509

* Dense fogs prevailed on five days ; snow-storms on three days ; and train-signalling interrupted one day by the accidental destruction of a telegraph post, together with two lengths of wires, at an important suburban junction, all causing unavoidable delays in working the traffic.

† Five exceedingly foggy days, and three days on which there were severe snow-storms during the month.

‡ This Return does not include 10th and 17th November, on which days dense fogs prevailed, and the fogging regulations were in force. The trains were delayed on other days, when slight fogs prevailed, and also by severe snow-storms during the month.

RAILWAYS (TIMES OF TRAINS).

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(*Mr. Baumann.*)

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29 April 1890.*

[*Price 3 d.*]

151—V

H.—12, I. 91.

Under 1 oz.

RETURN

IN PURSUANCE OF

SECTION 4 OF THE REGULATION OF RAILWAYS ACT, 1889,

OF

Certain Classes of Weekly-paid Servants who were during the Months of September 1889 and March 1890 on Duty on the Railways of the United Kingdom for more than Twelve Hours at a time; or who, after being on Duty more than Twelve Hours, were allowed to resume Work with less than Eight Hours' Rest.

Presented to both Houses of Parliament by Command of Her Majesty.



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1890.

RETURN in pursuance of Section 4 of the Regulation of Railways Act, 1889, of 1890 on DUTY on the RAILWAYS of the UNITED KINGDOM for more than were allowed to resume Work with less than EIGHT HOURS' REST, classified as

NAME OF COMPANY.	Class of Servant.	Period.	Total Number of each Class of Servant in the Employ of the Company.	Relating to Servants who were on Duty more than										
				Number of Servants on Duty more than Twelve Hours at a time.	Number of Instances of such Duty exceeding									
					One Hour.	Two Hours.	Three Hours.	Four Hours.	Daily per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
ENGLAND AND WALES:														
Aylesbury and Buckingham	Passenger Guards	Sept. 1889	*1	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	1	Nil	.	.	.	.	.	.	.	.	.	
	Engine Drivers and Firemen	Sept. 1889	2	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	2	Nil	.	.	.	.	.	.	.	.	.	
	Signalmen	Sept. 1889	1 London and North-Western Railway Servant								.	.	.	
		Mar. 1890	1 Great Western Railway Servant								.	.	.	
	Barry Dock and Railways Company.	Passenger Guards	Sept. 1889	2	.	.	.	.	.	.	.	.	.	.
			Mar. 1890	2	.	.	.	.	.	.	.	.	.	.
Goods Guards		Sept. 1889	21	21	100	25	4'57	.	.	.	.	.	.	
		Mar. 1890	26	20	76	22	3'25	.	.	.	.	.	.	
Engine Drivers and Firemen		Sept. 1889	47	27	57	30	2'45	.	.	.	.	.	.	
		Mar. 1890	69	33	48	35	1'94	.	.	.	.	.	.	
Signalmen		Sept. 1889	26	.	.	.	.	.	.	.	.	.	.	
		Mar. 1890	23	.	.	.	.	.	.	.	.	.	.	
Examiners	Sept. 1889	4	.	.	.	.	.	.	.	.	.	.		
	Mar. 1890	4	.	.	.	.	.	.	.	.	.	.		
Bishop's Castle Railway	Passenger and Goods Guards	Sept. 1889	1	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	1	Nil	.	.	.	.	.	.	.	.	.	
	Engine Drivers and Firemen	Sept. 1889	2	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	2	Nil	.	.	.	.	.	.	.	.	.	
Brecon and Merthyr	Passenger Guards	Sept. 1889	4	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	4	Nil	.	.	.	.	.	.	.	.	.	
	Goods Guards { (25 days) (26 days)	Sept. 1889	27	27	†100	165	21'44	76	11'26	68	10'07	47	6'96	
		Mar. 1890	26	26	†100	120	17'75	117	17'31	59	8'73	27	3'99	
	Engine Drivers and Firemen	Sept. 1889	52	39	75	153	11'77	107	8'23	51	3'92	43	3'31	
		Mar. 1890	51	36	71	162	12'22	132	9'95	82	2'41	6	0'45	
	Signalmen	Sept. 1889	42	1	2	7	0'67	15	1'43	3	0'29	.	.	
		Mar. 1890	42	1	2	9	0'82	13	1'19	3	0'27	.	.	
Examiners	Sept. 1889	7	Nil	.	.	.	.	.	.	.	.	.		
	Mar. 1890	7	Nil	.	.	.	.	.	.	.	.	.		
Bristol Port Railway and Pier Company.	Passenger Guards	Sept. 1889	1	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	1		.	.	.	.	.	.	.	.	.	
	Engine Drivers and Firemen	Sept. 1889	4		.	.	.	.	.	.	.	.	.	
		Mar. 1890	4		.	.	.	.	.	.	.	.	.	
Signalmen	Sept. 1889	6	.	.	.	.	.	.	.	.	.	.		
	Mar. 1890	6	.	.	.	.	.	.	.	.	.	.		

* Passenger Guard also works Goods Trains.

† Men who work long hours one day are either booked off for next day, or put on trains working

RETURN of Weekly-paid Servants of Railway Companies of the United Kingdom who were on Duty during

NAME OF COMPANY.	Class of Servant.	Period.	Total Number of each Class of Servant in the Employ of the Company.	Relating to Servants who were on Duty more than										
				Number of Servants on Duty more than Twelve Hours at a time.	Number of Instances of such Duty exceeding									
					One Hour.		Two Hours.		Three Hours.		Four Hours.			
						Per- centage.		Daily per- centage.		Daily per- centage.		Daily per- centage.		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
Bourn and Lynn (Midland and Great Northern Joint Line).	Signalmen - -	Sept. 1889	53	19	35·84	172	12·98	10	·75	5	·37	2	·15	
		Mar. 1890	53	18	33·96	186	13·49	4	·29	2	·14	.	.	
Cambrian Railways - -	Passenger Guards - -	Sept. 1889	21	3	14·29	10	1·90	6	1·14	.	.	1	·19	
		Mar. 1890	21	2	9·52	.	.	.	.	8	1·47	.	.	
	Goods Guards - -	Sept. 1889	16	6	37·50	26	6·50	37	9·25	11	2·75	.	.	
		Mar. 1890	17	6	35·29	50	11·31	21	4·75	.	.	.	.	
	Engine Drivers and Firemen - -	Sept. 1889	116	32	27·59	7	·24	27	·93	25	·86	20	·69	
		Mar. 1890	114	18	15·79	.	.	55	1·86	19	·64	21	·71	
	Signalmen - -	Sept. 1889	36	10	27·77	39	4·33	49	5·44	16	1·78	11	1·22	
		Mar. 1890	36	5	13·88	38	4·06	51	5·44	3	·32	2	·21	
	Examiners - -	Sept. 1889	14	4	28·57	.	.	57	16·23	3	·86	.	.	
		Mar. 1890	14	4	28·57	30	8·24	26	7·14	.	.	.	.	
	Cheshire Lines Committee	Passenger Guards - -	Sept. 1889	41	2	4·88	3	0·29	.	.	.	.	.	.
			Mar. 1890	41	1	2·44	1	0·09	.	.	.	.	.	.
Goods Guards - -		Sept. 1889	66	28	42·42	52	3·15	31	1·88	12	0·73	4	0·24	
		Mar. 1890	64	34	53·12	52	3·12	26	1·56	10	0·60	5	0·30	
Engine Drivers and Firemen - -		Sept. 1889	304	153	50·36	610	8·03	534	7·03	348	4·58	264	3·47	
		Mar. 1890	321	137	42·67	642	7·69	476	5·70	294	3·52	210	2·52	
Signalmen - -		Sept. 1890	213	11	5·16	40	0·75	31	0·58	6	0·11	3	0·06	
		Mar. 1890	217	7	3·23	30	0·53	19	0·34	1	0·02	.	.	
Examiners - -		Sept. 1889	27	2	7·40	.	.	3	0·44	2	0·29	1	0·14	
		Mar. 1890	27	1	3·70	.	.	.	.	.	.	2	0·28	
Cleator and Workington Junction Railway.		Passenger Guards - -	Sept. 1889	Nil	.	.	.	.	.	.	.	.	.	.
			Mar. 1890	Nil	.	.	.	.	.	.	.	.	.	.
	Goods Guards - -	Sept. 1889	4	.	.	.	.	.	.	.	.	.	.	
		Mar. 1890	4	.	.	.	.	.	.	.	.	.	.	
	Engine Drivers and Firemen - -	Sept. 1889	8	8	100	12	6	2	1	2	1	.	.	
		Mar. 1890	8	8	100	34	16·35	4	1·92	4	1·92	.	.	
	Signalmen - -	Sept. 1889	15	15	100	15	4	1	·27	1	·27	.	.	
		Mar. 1890	15	15	100	12	3·08	.	.	4	1·02	.	.	
	Examiners - -	Sept. 1889	1	.	.	.	.	.	.	.	.	.	.	
		Mar. 1890	1	.	.	.	.	.	.	.	.	.	.	
	Cockermouth, Keswick, and Purth Railway Company.	Signalmen - -	Sept. 1889	9	1	11·11	1	·44	.	.	.	.	.	.
			Mar. 1890	9	2	22·22	3	1·28	.	.	1	·43	.	.

the Months of September 1889 and March 1890 for more than Twelve Hours at a time, &c.—continued.

[illegible]

RETURN of Weekly-paid Servants of Railway Companies of the United Kingdom who were on Duty during

NAME OF COMPANY.	Class of Servant.	Period.	Total Number of each Class of Servant in the Employ of the Company.	Relating to Servants who were on duty more than										
				Number of Servants on Duty more than Twelve Hours at a time.	Number of Instances of such Duty exceeding									
					One Hour.		Two Hours.		Three Hours.		Four Hours.			
						Per- centage.		Daily per centage.		Daily per centage.		Daily per centage.		Daily per centage.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
Colne Valley and Halstead Railways.	Passenger Guards	Sept. 1889	1	1	100	1	4	.	.	.	.	.	.	
		Mar. 1890	1	1	100	1	3'84	.	.	.	.	.	.	
	Goods Guards	Sept. 1889	1	1	100	1	4	.	.	.	.	.	.	
		Mar. 1890	1	1	100	1	3'84	.	.	.	.	.	.	
	Engine Drivers and Firemen	Sept. 1889	4	4	100	.	.	4	4	.	.	.	.	
		Mar. 1890	4	4	100	.	.	4	3'84	.	.	.	.	
	Signalmen	Sept. 1889	1	1	100	.	.	1	4	.	.	.	.	
		Mar. 1890	1	1	100	.	.	1	3'84	.	.	.	.	
	Examiners	Sept. 1889	2	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	2	Nil	.	.	.	.	.	.	.	.	.	
	Corris Railway Company	Passenger Guards	Sept. 1889	1	Nil	.	.	.	.	.	.	.	.	.
			Mar. 1890	1	Nil	.	.	.	.	.	.	.	.	.
Goods Guards		Sept. 1889	1	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	1	Nil	.	.	.	.	.	.	.	.	.	
Engine Drivers and Firemen		Sept. 1889	2	1	50	.	.	25	50	Interval of rest of 5 hours				
		Mar. 1890	2	1	50	.	.	26	50	Interval of rest of 4 hours				
Signalmen		Sept. 1889	3	1	33'33	.	.	25	33'33	Interval of rest of 6 hours				
		Mar. 1890	3	1	33'33	.	.	25	32'05	Interval of rest of 6 hours				
Examiners		Sept. 1889	1	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	1	Nil	.	.	.	.	.	.	.	.	.	
East and West Junction Railway.		Passenger Guards	Sept. 1889	3	Nil	.	.	.	.	.	.	.	.	.
			Mar. 1890	3	Nil	.	.	.	.	.	.	.	.	.
	Goods Guards	Sept. 1889	2	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	2	Nil	.	.	.	.	.	.	.	.	.	
	Engine Drivers and Firemen	Sept. 1889	12	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	12	Nil	.	.	.	.	.	.	.	.	.	
	Signalmen	Sept. 1889	16*	2	12'5	2	5	.	.	.	.	.	.	
		Mar. 1890	16*	2	12'5	2	45	.	.	.	.	.	.	
	Examiners	Sept. 1889	1	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	1	Nil	.	.	.	.	.	.	.	.	.	
	Eastern and Midlands	Passenger Guards	Sept. 1889	7	4	57'14	5	2'86	19	10'86	3	1'71	Nil	.
			Mar. 1890	7	5	71'43	2	1'10	22	12'09	24	13'19	Nil	.
Goods Guards		Sept. 1889	7	7	100'00	38	21'71	19	10'86	11	6'28	3	1'71	
		Mar. 1890	7	6	85'71	30	16'48	14	7'69	3	1'65	Nil	.	
Engine Drivers and Firemen		Sept. 1889	54	54	100'00	132	9'77	194	14'37	187	13'85	149	11'03	
		Mar. 1890	53	53	100'00	146	10'59	116	8'41	154	11'17	101	7'33	
Signalmen†		Sept. 1889	37	33	89'19	270	29'19	38	4'11	23	2'48	21	2'27	
		Mar. 1890	37	30	81'08	226	23'49	7	7'3	5	52	1	10	
Examiners		Sept. 1889	All examiners work on 12 hours' shifts.										.	
		Mar. 1890											.	

* This only occurs on Saturday night for the purpose of attending two goods trains on Sunday
 † Where the line is kept open all night the Signalmen work on 11 and 13 hours' shifts, hence

the Months of September 1889 and March 1890 for more than Twelve Hours at a time, &c.—continued.

Twelve Hours at a time.				Relating to Servants enumerated in Column No. 5, who, after being on Duty more than Twelve Hours, were allowed to resume Duty with less than Eight Hours' Rest.																			
Twelve Hours by				Number of Servants so resuming Duty.		Number of Instances of Duty having been so resumed after																	
Five Hours.		Six Hours and upwards.				One Hour's Rest.		Two Hours' Rest.		Three Hours' Rest.		Four Hours' Rest.		Five Hours' Rest.		Six Hours' Rest.							
	Daily per-centage.		Daily per-centage.		Per-centage.		Monthly per-centage.		Monthly per-centage.		Monthly per-centage.		Monthly per-centage.		Monthly per-centage.		Monthly per-centage.		Monthly per-centage.		Monthly per-centage.		
(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)				
.	.	.	.	Nil	.	.	.	.	.	.	.	.	.	.	.	.	5	.	.				
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1	'57	1	'57	Nil	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.				
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115	8'51	15	1'11	31	57'40	.	.	.	.	.	.	3	5'55	5	9'25	30	55'55	62	114'81				
23	1'66	8	'58	7	13'20	Nil	.	.	.	.	.	.	.	.	.	.	.	15	28'30				
4	'43	4	'43	8	21'62	.	.	.	.	.	.	.	.	1	2'70	5	13'50	9	24'32				
Nil	.	1	'10	Nil	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.				
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.				

morning, the men leave duty 9'30 a.m Sunday morning and do not resume duty until Monday.
the 270 and 226 cases of 1 hour over 12.

[illegible]

RETURN of Weekly-paid Servants of Railway Companies of the United Kingdom who were on Duty during

NAME OF COMPANY.	Class of Servant.	Period.	Total Number of each Class of Servant in the Employ of the Company.	Relating to Servants who were on Duty more than										
				Number of Servants on Duty more than Twelve Hours at a time.		Number of Instances of such Duty exceeding								
						One Hour.		Two Hours.		Three Hours.		Four Hours.		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
Great Eastern	Passenger Guards	Sept. 1889	311	11	3'53	66	0'80	28	0'32	2	0'02	.	.	
		Mar. 1890	310	5	1'61	30	0'37	1	0'01	.	.	.	.	
	Goods Guards	Sept. 1889	226	208	92'00	580	10'26	529	9'36	287	5'07	186	3'29	
		Mar. 1890	229	204	89'08	553	9'28	508	8'53	223	3'74	180	3'02	
	Engine Drivers and Firemen	Sept. 1889	1,594	1,162	72'90	4,006	10'05	2,518	6'32	1,690	4'24	770	1'93	
		Mar. 1890	1,620	1,128	69'63	3,965	9'41	2,148	5'10	1,336	3'17	574	1'36	
	Signalmen	Sept. 1889	980	91	9'28	329	1'34	274	1'11	207	0'84	39	0'15	
		Mar. 1890	1,019	57	5'59	104	0'39	42	0'15	24	0'09	4	0'01	
	Examiners	Sept. 1889	116	12	10'34	53	1'83	.	.	.	.	6	'21	
		Mar. 1890	116	16	13'80	88	2'91	.	.	.	.	7	'23	
	Great Northern	Passenger Guards	Sept. 1889	288	118	40'97	265	3'68	276	3'83	52	'72	5	'06
			Mar. 1890	280	88	31'42	192	2'63	95	1'30	44	'60	1	'01
Goods Guards		Sept. 1889	560	534	95'35	2,216	15'82	1,403	10'02	753	5'37	369	2'63	
		Mar. 1890	584	519	88'86	1,676	11'03	927	6'10	383	2'52	200	1'31	
Engine Drivers and Firemen		Sept. 1889	1,467	1,349	91'95	4,685	12'77	3,576	9'75	2,160	5'88	1,336	3'78	
		Mar. 1890	1,533	1,332	86'88	4,622	11'59	3,040	7'62	1,823	4'57	993	2'49	
Signalmen		Sept. 1889	1,036	155	14'96	352	1'35	109	'42	80	'30	18	'06	
		Mar. 1890	1,068	105	9'92	233	'84	64	'23	24	'08	7	'02	
Examiners		Sept. 1889	121	.	.	.	.	.	.	.	.	.	.	
		Mar. 1890	124	.	.	.	.	.	.	.	.	.	.	
Great Northern and Great Eastern Joint.		Signalmen	Sept. 1889	101	18	17'82	40	1'58	8	'316	3	'118	1	'039
			Mar. 1890	102	30	29'41	41	1'54	16	'603	12	'452	Nil	.
Great Northern and London and North-Western Joint.	Signalmen	Sept. 1889	36	Nil	.	.	.	.	.	.	.	.		
		Mar. 1890	37											
Great Western	Passenger Guards	Sept. 1889	477	11	2'30	52	'43	21	'17	.	.	11	'92	
		Mar. 1890	450	4	'88	41	'35	6	'05	.	.	.	.	
	Goods Guards	Sept. 1889	1,126	764	67'85	2,657	9'43	1,550	5'50	694	2'46	304	1'07	
		Mar. 1890	1,174	830	70'69	2,306	7'55	1,052	3'44	419	1'37	114	'37	
	Engine Drivers and Firemen	Sept. 1889	2,991	2,700	90'57	11,965	16'00	7,730	10'33	3,580	4'78	1,314	1'75	
		Mar. 1890	3,114	2,608	83'75	11,927	14'73	5,707	7'05	2,169	2'67	586	'72	
	Signalmen	Sept. 1889	2,029	259	12'76	267	'56	186	'36	172	'34	76	'15	
		Mar. 1890	2,151	132	6'13	157	'23	90	'16	30	'05	26	'04	
	Examiners	Sept. 1889	298	47	16'04	78	1'06	18	'24	8	'10	16	'21	
		Mar. 1890	302	32	10'59	37	'47	12	'15	4	'05	8	'10	

RETURN of Weekly-paid Servants of Railway Companies of the United Kingdom who were on Duty during

NAME OF COMPANY.	Class of Servant.	Period.	Total Number of each Class of Servant in the Employ of the Company.	Relating to Servants who were on Duty more than										
				Number of Servants on Duty more than Twelve Hours at a time.	Number of Instances of such Duty exceeding									
					One Hour.		Two Hours.		Three Hours.		Four Hours.			
						Per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
Hammersmith and City	Passenger Guards	Sept. 1889	The train service on this line is provided by the Great-Western and and Firemen, and Examiners. In no case were Signalmen employed for											
		Mar. 1890												
	Goods Guards	Sept. 1889												
		Mar. 1890												
	Engine Drivers and Firemen	Sept. 1889												
		Mar. 1890												
	Signalmen	Sept. 1889												
		Mar. 1890												
	Examiners	Sept. 1889												
		Mar. 1890												
Hull, Barnsley, and West Riding Junction Railway and Dock.	Passenger Guards	Sept. 1889	7	4	57'14	.	.	.	.	.	.	2	1'14	
		Mar. 1890	7	3	42'85	2	1'09	.	.	1	0'54	.	.	
	Goods Guards	Sept. 1889	38	18	47'36	14	1'47	20	2'10	25	2'63	19	2'00	
		Mar. 1890	41	18	43'90	24	2'25	22	2'06	19	1'78	18	1'68	
	Engine Drivers and Firemen	Sept. 1889	47	47	*100'00	259	22'04	142	12'08	114	9'70	73	6'21	
			49	49	*100'00	229	18'69	122	9'96	101	8'24	67	5'47	
		Mar. 1890	51	51	*100'00	233	17'57	103	7'76	71	5'35	55	4'14	
			49	49	*100'00	206	16'18	91	7'14	67	5'26	47	3'69	
	Signalmen	Sept. 1889	81	2	2'46	.	.	1	0'04	.	.	1	0'04	
		Mar. 1890	82	7	8'53	.	.	1	0'04	1	0'04	1	0'04	
	Examiners	Sept. 1889	15	12	80'00	17	4'53	18	4'80	14	3'73	5	1'33	
		Mar. 1890	15	11	73'33	23	5'89	4	1'02	11	2'82	8	2'05	
	Isle of Wight	Passenger Guards	Sept. 1889	3	2	66'	29	38'66	.	.	4	5'33	.	.
			Mar. 1890	3	2	66'	31	39'74	.	.	.	.	.	.
Goods Guards		Sept. 1889	2	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	2		.	.	.	.	.	.	.	.	.	
Engine Drivers and Firemen		Sept. 1889	10	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	10		.	.	.	.	.	.	.	.	.	
Signalmen		Sept. 1889	6	5	83'	36	24'00	17	11'33	19	12'68	1	0'66	
		Mar. 1890	6	5	83'	25	16'02	21	13'46	14	8'97	6	3'84	
Examiners		Sept. 1889	1	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	1		.	.	.	.	.	.	.	.	.	
Isle of Wight Central and Freshwater, Yarmouth, and Newport.	Passenger Guards	Sept. 1889	4	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	4		.	.	.	.	.	.	.	.	.	
	Goods Guards	Sept. 1889	Nil	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	Nil		.	.	.	.	.	.	.	.	.	
	Engine Drivers and Firemen	Sept. 1889	12	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	12		.	.	.	.	.	.	.	.	.	
	Signalmen	Sept. 1889	2	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	2		.	.	.	.	.	.	.	.	.	
Examiners	Sept. 1889	1	Nil	.	.	.	.	.	.	.	.	.		
	Mar. 1890	1		.	.	.	.	.	.	.	.	.		

* All men take their turn off duty.

the Months of September 1889 and March 1890 for more than Twelve Hours at a time. &c.—*continued.*

[illegible]

Metropolitan Railway Companies, in whose Returns will be included the information relating to Passenger and Goods Guards, Engine Drivers more than 12 hours at a time.

[illegible]

hence no long hours or shifts.

NAME OF COMPANY.	Class of Servant.	Period.	Total Number of each Class of Servant in the Employ of the Company.	Relating to Servants who were on Duty more than									
				Number of Servants on Duty more than Twelve Hours at a time.		Number of Instances of such Duty exceeding							
						One Hour.		Two Hours.		Three Hours.		Four Hours.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Lancashire and Yorkshire	Passenger Guards - {	Sept. 1889	278	172	61'87	138	2'60	96	1'32	63	'87	60	'83
		Mar. 1890	264	88	33'33	139	2'02	34	'49	27	'39	11	'16
	Goods Guards - {	Sept. 1889	374	367	98'12	1,461	15'62	835	8'98	429	4'58	168	1'79
		Mar. 1890	406	393	96'79	1,565	14'82	944	8'94	448	4'24	223	2'11
	Engine Drivers and Firemen - {	Sept. 1889	1,544	1,539	99'67	5,864	15'19	4,076	10'55	2,187	5'66	815	2'11
		Mar. 1890	1,636	1,617	98'83	5,481	12'88	3,382	7'95	1,667	3'91	554	1'30
	Signalmen - {	Sept. 1889	1,265	254	20'07	373	1'13	165	'50	99	'30	71	'21
		Mar. 1890	1,271	238	18'72	384	1'16	182	'39	27	'08	54	'16
	Examiners - {	Sept. 1889	112	56	50'	68	2'43	24	'86	4	'14	4	'14
		Mar. 1890	108	52	48'15	62	2'21	28	'99	8	'28	6	'21
Liskeard and Caradon	Passenger Guards - {	Sept. 1889	1	Nil	.	.	.	.	.	.	.	.	.
		Mar. 1890	1										
	Goods Guards - {	Sept. 1889	2	Nil	.	.	.	.	.	.	.	.	
		Mar. 1890	2										
	Engine Drivers and Firemen - {	Sept. 1889	2	2									
		Mar. 1890	2										
London and North-Western	Passenger Guards - {	Sept. 1889	472	8	1'60	6	'05	3	'01	1	'008	.	.
		Mar. 1890	449	3	'66	2	'01	.	.	.	.	1	'008
	Goods Guards - {	Sept. 1889	1,280	804	62'81	1,107	3'74	19	'05	3	'009	.	.
		Mar. 1890	1,373	741	53'96	773	2'17	5	'014	.	.	.	.
	Engine Drivers and Firemen - {	Sept. 1889	5,708	5,220	91'45	19,098	13'38	14,400	10'08	7,117	4'98	86	'06
		Mar. 1890	5,652	4,813	85'15	17,882	12'16	9,341	6'35	3,156	2'14	17	'01
	Signalmen - {	Sept. 1889	2,257	122	5'40	138	'24	72	'12	10	'01	23	'04
		Mar. 1890	2,293	92	4'01	92	'15	60	'10	6	'01	21	'03
	Examiners - {	Sept. 1889	639	32	4'64	88	'53	71	'41	14	'08	5	'02
		Mar. 1890	636	29	4'55	88	'52	69	'41	15	'09	4	'02
London and North-Western and Midland Railways (Ashby and Nuneaton Joint Line).	Signalmen - {	Sept. 1889	18	3	16'66	46	10'22	3	'66	.	.	.	.
		Mar. 1890	18	2	11'11	27	5'76	1	'21	13	2'77	.	.
London and North-Western and Great Western Joint Railway Companies.	Passenger Guards - {	Sept. 1889	6	1	16'66	25	16'66	.	.	.	.	.	.
		Mar. 1890	6	1	16'66	26	16'66	.	.	.	.	.	.
	Goods Guards - {	Sept. 1889	1	1	100	10	'40	5	'20	6	'24	.	.
		Mar. 1890	1	.	.	.	.	.	.	.	.	.	.
	Engine Drivers and Firemen - {	Sept. 1889	.	.	.	.	.	.	.	.	.	.	.
		Mar. 1890	.	.	.	.	.	.	.	.	.	.	.
	Signalmen - {	Sept. 1889	223	5	2'19	7	'12	5	'9	1	'2	.	.
		Mar. 1890	229	3	1'31	7	'12	4	'7	.	.	.	.
Examiners - {	Sept. 1889	2	.	.	.	.	.	.	.	.	.	.	
	Mar. 1890	2	.	.	.	.	.	.	.	.	.	.	

NAME OF COMPANY.	Class of Servant.	Period.	Total Number of each Class of Servant in the Employ of the Company.	Relating to Servants who were on Duty more than										
				Number of Servants on Duty more than Twelve Hours at a time.		Number of Instances of such Duty exceeding								
						One Hour.		Two Hours.		Three Hours.		Four Hours.		
						Daily per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
London and South-Western	Passenger Guards - {	Sept. 1889	309	Nil	.	.	.	.	.	.	.	.	.	.
		Mar. 1890	304	Nil	.	.	.	.	.	.	.	.	.	.
	Goods Guards - {	Sept. 1889	277	77	27'0	102	1'00	56	0'66	46	0'53	41	0'46	
		Mar. 1890	282	31	11'0	20	0'23	9	0'10	8	0'08	2	0'02	
	Engine Drivers and Firemen - {	Sept. 1889	1,004	Nil	.	.	.	.	.	.	.	.	.	.
		Mar. 1890	1,015	Nil	.	.	.	.	.	.	.	.	.	.
	Signalmen - {	Sept. 1889	868	Nil	.	.	.	.	.	.	.	.	.	.
		Mar. 1890	874	Nil	.	.	.	.	.	.	.	.	.	.
	Examiners - {	Sept. 1889	167	Nil	.	.	.	.	.	.	.	.	.	.
		Mar. 1890	167	Nil	.	.	.	.	.	.	.	.	.	.
London, Brighton, and South Coast.	Passenger Guards - {	Sept. 1889	284	195	68'66	199	2'33	480	5'63	369	4'33	197	2'30	
		Mar. 1890	273	52	19'04	49	'87	74	'87	36	'42	10	'11	
	Goods Guards - {	Sept. 1889	161	94	58'38	125	2'58	177	3'66	122	2'52	46	'95	
		Mar. 1890	163	56	34'35	170	3'36	105	2'07	73	1'44	18	'35	
	Engine Drivers and Firemen. {	Sept. 1889	738	692	93'77	1,273	5'75	1,352	6'11	1,302	5'88	779	3'52	
		Mar. 1890	751	685	91'21	1,543	6'65	1,256	5'40	1,229	5'28	412	1'77	
	Signalmen - - {	Sept. 1889	590	6	1'016	2	'01	4	'02	.	.	.	.	
		Mar. 1890	592	1	'16	2	'01	.	.	.	.	.	.	
	Examiners - - {	Sept. 1889	86	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	87	Nil	.	.	.	.	.	.	.	.	.	
London, Chatham, and Dover	Passenger Guards - {	Sept. 1889	143	75	52'44	38	1'06	39	1'09	48	1'34	26	'73	
		Mar. 1890	139	33	23'74	13	'36	5	'14	4	'11	3	'08	
	Goods Guards - - {	Sept. 1889	50	40	80'	10	'8	8	'64	22	1'76	28	2'24	
		Mar. 1890	51	25	49'	.	.	23	1'73	6	'45	4	'3	
	Engine Drivers and Firemen - - {	Sept. 1889	368	334	90'76	539	5'85	565	6'14	732	7'96	210	2'28	
		Mar. 1890	368	311	84'51	578	9'17	597	6'24	442	4'62	159	1'66	
	Signalmen - - {	Sept. 1889	264	56	21'21	15	'23	53	'8	26	'39	63	'95	
		Mar. 1890	269	16	5'94	10	'14	26	'37	2	'03	4	'05	
	Examiners - - {	Sept. 1889	.	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	.	Nil	.	.	.	.	.	.	.	.	.	
Londonderry, Seaham and Sunderland.	Passenger Guards - {	Sept. 1889	4	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	4	Nil	.	.	.	.	.	.	.	.	.	
	Goods Guards - {	Sept. 1889	5	5	100	20	16'	1	'8	.	.	1	'8	
		Mar. 1890	6	6	100	40	25'64	3	1'92	.	.	.	.	
	Engine Drivers and Firemen - - {	Sept. 1889	22	18	81'80	72	13'09	12	2'18	22	4'	22	4'	
		Mar. 1890	22	18	81'80	83	14'51	18	3'14	12	2'09	4	'60	
	Signalmen - - {	Sept. 1889	7	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	7	Nil	.	.	.	.	.	.	.	.	.	
	Examiners - - {	Sept. 1889	2	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	2	Nil	.	.	.	.	.	.	.	.	.	

RETURN of Weekly-paid Servants of Railway Companies of the United Kingdom who were on Duty during

NAME OF COMPANY.	Class of Servant.	Period.	Total Number of each Class of Servant in the Employ of the Company.	Relating to Servants who were on Duty more than										
				Number of Servants on Duty more than Twelve Hours at a Time.	Number of Instances of such Duty exceeding									
					One Hour.	Two Hours.	Three Hours.	Four Hours.	Daily per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
London, Tilbury, and South- end Railway.	Passenger Guards	Sept. 1889	32	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	32	Nil	.	.	.	.	.	.	.	.	.	
	Goods Guards	Sept. 1889	16	6	37.5	9	2.25	5	1.25	7	1.75	11	2.75	
		Mar. 1890	15	5	33.33	18	4.61	11	2.82	2	.51	1	.25	
	Engine Drivers and Firemen	Sept. 1889	63	55	87.30	20	1.27	97	6.16	57	3.62	84	5.33	
		Mar. 1890	63	42	66.66	55	3.36	18	1.1	18	1.1	27	1.65	
	Signalmen	Sept. 1889	56	8	14.28	9	.64	24	1.71	2	.14	12	.85	
		Mar. 1890	56	3	5.35	.	.	5	.34	6	.41	.	.	
	Examiners	Sept. 1889	11	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	11	Nil	.	.	.	.	.	.	.	.	.	
	Manchester and Milford	Passenger Guards	Sept. 1889	3	}	Junction signals worked by other Companies.								
			Mar. 1890	3										
Goods Guards		Sept. 1889	1	}	Nil									
		Mar. 1890	1											
Engine Drivers and Firemen		Sept. 1889	8	}	Nil									
		Mar. 1890	8											
Signalmen		Sept. 1889	Nil	}	Junction signals worked by other Companies.									
		Mar. 1890	Nil											
Examiners		Sept. 1889	1	}	Nil									
		Mar. 1890	1											
Manchester, Sheffield, and Lincolnshire Railway.		Passenger Guards	Sept. 1889	111	8	7.20	11	0.39	18	0.65	.	.	.	.
			Mar. 1890	108	3	2.83	15	0.54	11	0.40	.	.	.	.
	Goods Guards	Sept. 1889	287	266	92.68	1,130	15.75	860	11.98	567	7.90	350	4.88	
		Mar. 1890	329	288	87.53	1,021	11.93	747	8.73	429	5.01	165	2.28	
	Engine Drivers and Firemen	Sept. 1889	887	630	71.02	2,816	12.70	2,358	10.63	1,462	6.59	926	4.17	
		Mar. 1890	945	644	68.15	2,886	11.75	2,042	8.81	1,112	4.53	678	2.76	
	Signalmen	Sept. 1889	687	116	16.88	327	1.90	41	0.24	45	0.26	107	0.62	
		Mar. 1890	709	115	16.22	326	1.77	71	0.38	22	.12	27	.14	
	Examiners	Sept. 1889	68	15	22.05	120	7.05	29	1.70	5	.29	4	.23	
		Mar. 1890	68	16	23.53	125	7.07	28	1.58	3	.16	3	.16	
	Manchester South Junction and Altrincham.	Passenger Guards	Sept. 1889	6	}	No instance								
			Mar. 1890	6										
Goods Guards		Sept. 1889	2	}	No instance									
		Mar. 1890	2											
Engine Drivers and Firemen		Sept. 1889	Provided by Manchester, Sheffield, and Lincolnshire Company.											
		Mar. 1890												
Signalmen		Sept. 1889	44	*4 men each on duty 13½ hours at a time in three instances only										
		Mar. 1890	44											
Examiners		Sept. 1889	Provided by Manchester, Sheffield, and Lincolnshire Company.											
		Mar. 1890												

* These instances are mainly on Sundays, when the traffic is very light.

the Months of September 1889 and March 1890 for more than Twelve Hours at a time, &c.—*continued.*

Twelve Hours at a time.				Relating to Servants enumerated in Column No. 5, who, after being on Duty more than Twelve Hours, were allowed to resume Duty with less than Eight Hours' Rest.																			
Twelve Hours by				Number of Servants so resuming Duty.		Number of Instances of Duty having been so resumed after																	
Five Hours.		Six Hours and upwards.				One Hour's Rest.		Two Hours' Rest.		Three Hours' Rest.		Four Hours' Rest.		Five Hours' Rest.		Six Hours' Rest.		Seven Hours' Rest.					
Daily per-centage.		Daily per-centage.		Per-centage.		Monthly per-centage.		Monthly per-centage.		Monthly per-centage.		Monthly per-centage.		Monthly per-centage.		Monthly per-centage.		Monthly per-centage.		Monthly per-centage.			
(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)				
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RETURN of Weekly-paid Servants of Railway Companies of the United Kingdom who were on Duty during

NAME OF COMPANY.	Class of Servant.	Period.	Total Number of each Class of Servant in the Employ of the Company.	Relating to Servants who were on Duty more than									
				Number of Servants on Duty more than Twelve Hours at a Time.		Number of Instances of such Duty exceeding							
						One Hour.		Two Hours.		Three Hours.		Four Hours.	
				Per- centage.	Per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
*Midland Railway Company	Passenger Guards	Sept. 1889	433	129	29·7	432	3·99	66	·60	23	·21	3	·02
		Mar. 1890	384	98	25·5	395	3·95	39	·39	5	·05	1	·01
	Goods Guards	Sept. 1889	1,354	1,284	94·83	4,155	12·27	3,000	8·80	1,080	5·84	1,182	3·49
		Mar. 1890	1,471	1,368	92·99	4,090	10·69	2,504	6·78	1,474	3·85	739	1·93
	Engine Drivers and Firemen	Sept. 1889	3,687	3,536	95·90	12,206	13·24	9,988	10·83	6,448	6·99	3,535	3·83
		Mar. 1890	3,930	3,705	94·27	13,190	12·90	9,761	9·55	5,448	5·29	2,612	2·55
	Signalmen	Sept. 1889	1,971	A 1,592 167	80·77 8·47	A 12,217 814	24·79 1·65	A 1,249 644	2·53 1·31	327	·66	110	·22
		Mar. 1890	2,044	A 1,680 129	82·19 6·31	A 12,152 709	22·86 1·23	A 1,126 565	2·11 1·06	272	·51	88	·16
	Examiners	Sept. 1889	286	5	1·74	3	·04	3	·04	·3	·04	2	·02
		Mar. 1890	296	5	1·68	3	·03	2	·02	·1	·01	2	·02
†Great Western and Midland Joint (Halsowen Line, Clifton Line, Worcester Joint Station).	Engine Drivers and Firemen	Sept. 1889	.	.	.	.	.	.	.	.	.	.	.
		Mar. 1890	.	.	.	.	.	.	.	.	.	.	.
	Signalmen	Sept. 1889	19	6	31·57	10	2·10	16	3·36	4	·84	2	·42
‡North Eastern and Midland Joint (Hawes Joint Sta- tion, Otley and Ilkley Joint Line, Swinton and Knottingley Joint Line).	Signalmen	Sept. 1889	25	15	60·	{ A 41 A 44 A 104	{ 6·56 7·04 15·38	20	3·20	8	1·28	1	·16
		Mar. 1890	26	19	73·07	{ 26 3·84 15·38	{ 3·84 15·38	6	·88	.	.	5	·73
§Midland, North-Eastern, and Lancashire and York- shire Railways Joint Staff at Normanton.	Signalmen	Sept. 1889	26	23	88·46	A 157	24·15	A 29	4·46	.	.	.	.
		Mar. 1890	23	23	100·	A 153	21·01	A 30	4·12	.	.	.	.
§Midland and Manchester, Sheffield and Lincolnshire Railways, Barnsley Joint Station.	Signalmen	Sept. 1889	4	4	100·	A 42	42·00	A 10	10·	.	.	.	.
		Mar. 1890	4	4	100·	A 42	40·38	A 10	9·61	.	.	.	.
§Great Eastern and Midland Joint (Tottenham and Hampstead Line).	Signalmen	Sept. 1889	16	16	100·	{ A 151 19 A 145 15	{ 37·75 4·75 34·85 3·60	A 15	3·75	20	5·	.	.
		Mar. 1890	16	14	87·50	{ A 145 15	{ 34·85 3·60	A 15	3·60	.	.	.	.
Midland and South-Western Junction Railway Com- pany.	Passenger Guards	Sept. 1889	2	.	.	.	.	.	.	.	.	.	.
		Mar. 1890	2	.	.	.	.	.	.	.	.	.	.
	Goods Guards	Sept. 1889	2	1	50·	.	.	12	24·	.	.	.	.
		Mar. 1890	2	1	50·	.	.	12	23·07	.	.	.	.
	Engine Drivers and Firemen	Sept. 1889	12	2	16·66	.	.	.	.	4	1·11	.	.
		Mar. 1890	12	2	16·66	.	.	.	.	.	.	8	2·15
	Signalmen	Sept. 1889	12	2	.	.	.	15	5·	.	.	.	.
		Mar. 1890	12	2	.	.	.	15	4·8	.	.	.	.
	Examiners	Sept. 1889	.	.	.	.	.	.	.	.	.	.	.
		Mar. 1890	.	.	.	.	.	.	.	.	.	.	.

* This return excludes fractions of an hour, and intervals of rest when the men have the instances of duty exceeding 12 hours marked A arise solely from the fact that the instances of duty having been resumed after an interval of less than eight hours.
† The percentages are calculated on the basis of 25 working days for the month of
‡ The percentages are worked out on the basis of 25 working days for the month of
§ The instances of duty exceeding 12 hours marked A arise solely from the fact that the instances of duty having been resumed after an interval of less than eight hours.
The percentages are worked out on the basis of 25 working days for the month of

RETURN of Weekly-paid Servants of Railway Companies of the United Kingdom who were on Duty during

NAME OF COMPANY.	Class of Servant.	Period.	Total Number of each Class of Servant in the Employ of the Company.	Relating to Servants who were on Duty more than										
				Number of Servants on Duty more than Twelve Hours at a Time.		Number of Instances of such Duty exceeding								
						One Hour.		Two Hours.		Three Hours.		Four Hours.		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
Neath and Brecon	Guards of Mixed Passenger and Goods Trains	Sept. 1889	4	3	75.0	2	2.0	4	4.0	2	2.0	.	.	
		Mar. 1890	4	3	75.0	2	1.92	4	3.84	.	.	.	.	
	Engine Drivers and Firemen	Sept. 1889	4	4	100.	14	14.0	31	31.0	5	5.0	2	2.0	
		Mar. 1890	6	6	100.	32	20.51	12	7.69	3	1.92	.	.	
	Signalmen	Sept. 1889	9	9	100.	48	21.33	24	10.66	2	.88	.	.	
		Mar. 1890	9	9	100.	50	21.36	11	4.70	5	2.13	18	7.69	
	Examiners	Sept. 1889	1	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	1	Nil	.	.	.	.	.	.	.	.	.	
	Northampton and Banbury Junction.	Passenger Guards	Sept. 1889	1										
			Mar. 1890	1										
Goods Guards		Sept. 1889	1											
		Mar. 1890	1											
*Engine Drivers and Firemen		Sept. 1889	.	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	.											
Signalmen		Sept. 1889	5											
		Mar. 1890	5											
Examiners		Sept. 1889	1											
		Mar. 1890	1											
North and South Western Junction Railway Joint Committee.	†Signalmen	Sept. 1889	28	8	28.57	1	.14	.	.	1	.14	10	1.42	
		Mar. 1890	28	8	28.57	1	.13	.	.	.	.	8	1.09	
‡ North-Eastern	Passenger Guards	Sept. 1889	363	31	10.23	45	0.59	68	0.90	9	0.12	1	0.01	
		Mar. 1890	312	15	4.81	33	0.41	39	0.48	.	.	3	0.04	
	Goods Guards	Sept. 1889	898	759	84.52	3,114	13.87	2,199	9.79	1,284	5.72	626	2.79	
		Mar. 1890	971	826	85.07	3,014	11.94	2,049	8.12	956	3.79	367	1.45	
	Engine Drivers and Firemen	Sept. 1889	2,781	2,309	83.03	10,233	14.72	7,896	11.36	5,722	8.23	2,952	4.24	
		Mar. 1890	2,893	2,370	81.92	11,041	14.68	7,730	10.27	4,721	6.27	2,384	3.17	
	Signalmen	Sept. 1889	1,839	251	13.65	472	1.03	461	1.00	230	0.50	66	0.13	
		Mar. 1890	1,897	163	8.59	337	0.68	245	0.49	64	0.13	17	0.03	
	Examiners	Sept. 1889	205	11	5.36	83	1.62	2	0.04	.	.	.	.	
		Mar. 1890	203	11	5.42	86	1.63	2	0.04	.	.	.	.	

* Engine drivers and firemen are the London and
† Except in special cases, such as sudden illness, signalmen work in the cabins for periods of eight hours only. The extra duty
‡ Note.—The daily per-centages in this return are calculated on the

RETURN of Weekly-paid Servants of Railway Companies of the United Kingdom who were on Duty during

NAME OF COMPANY.	Class of Servant.	Period.	Total Number of each Class of Servant in the Employ of the Company.	Relating to Servants who were on Duty more than									
				Number of Servants on Duty more than Twelve Hours at a Time.		Number of Instances of such Duty exceeding							
						One Hour.		Two Hours.		Three Hours.		Four Hours.	
					Per- centage.		Daily per- centage.		Daily per- centage.		Daily per- centage.		Daily per- centage.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
North London	Passenger Guards*	Sept. 1889	58	3	5'17	1	'06	1	'06	1	'06	.	.
		Mar. 1890	58	Nil	.	.	.	.	.	.	.	.	.
	Goods Guards*	Sept. 1889	25	11	44	22	3'52	1	'16	2	'32	3	'48
		Mar. 1890	25	12	48	20	3'07	14	2'15	3	'46	.	.
	Engine Drivers and Firemen	Sept. 1889	207	65	31'40	28	'54	9	'17	4	'07	2	'03
		Mar. 1890	207	46	22'22	39	'72	16	'29	4	'07	.	.
	Signalmen†	Sept. 1889	142	51	35'91	7	'19	2	'05	.	.	45	1'26
		Mar. 1890	145	52	35'86	6	'15	6	'15	3	'07	35	'9
	Examiners	Sept. 1889	8	8	100	5	2'50	.	.	4	2'00	5	2'50
		Mar. 1890	8	8	100	5	2'40	.	.	6	2'88	5	2'40
North Staffordshire	Passenger Guards	Sept. 1889	None.		.	.	.	.	.	.	.	.	.
		Mar. 1890			.	.	.	.	.	.	.	.	.
	Goods Guards	Sept. 1889	59	59	100'00	323	21'90	207	14'03	75	5'08	24	1'63
		Mar. 1890	64	62	97'87	371	23'94	176	11'35	64	4'13	27	1'74
	Engine Drivers and Firemen	Sept. 1889	104	104	100'00	509	19'58	495	19'04	317	12'19	112	4'31
		Mar. 1890	110	110	100'00	603	21'08	490	17'13	358	12'34	127	4'44
	Signalmen	Sept. 1889	None.		.	.	.	.	.	.	.	.	.
		Mar. 1890			.	.	.	.	.	.	.	.	.
	Examiners	Sept. 1889	29	2	6'90	38	5'24	10	1'37	.	.	.	.
		Mar. 1890	29	2	6'90	47	6'23	.	.	1	'13	.	.
North Union, Preston and Wyre, Preston and Long- ridge, and Lancashire and Yorkshire and Lancashire Union Joint Lines.	Signalmen	Sept. 1889	146	1	'68	2	'05	.	.	.	.	.	.
		Mar. 1890	140	1	'71	6	'16	3	'08	.	.	.	.
North Wales Narrow Gauge Railways Company.	Passenger and Goods Guards	Sept. 1889	2	Nil	.	.	.	.	.	.	.	.	.
		Mar. 1890	2										
	Engine Drivers and Firemen	Sept. 1889	4										
		Mar. 1890	4										
	Signalmen	Sept. 1889	1										
		Mar. 1890	1										
	Examiners	Sept. 1889	1										
		Mar. 1890	1										
Pembroke and Tenby	Passenger Guards	Sept. 1889	3	2	66'66	2	2'66	.	.	.	.	.	.
		Mar. 1890	2	Nil	.	.	.	.	.	.	.	.	.
	Goods Guards	Sept. 1889	2	1†	50	22	44	.	.	1	2	.	.
		Mar. 1890	2	1†	50	23	44'23	.	.	.	.	.	.
	Engine Drivers and Firemen	Sept. 1889	11§	11	100	22	8	74	26'90	106	38'54	4	1'45
		Mar. 1890	9	9	100	87	37'17	20	8'54	104	44'44	2	'85
		Sept. 1889											
		Mar. 1890											

* There are a number of assistant men not recognised as "passenger guards" or "goods guards," working the same hours, it being the practice, † Except in special cases, such as sudden illness, signalmen work in the cabins for periods of eight hours only. The extra duty performed is in

‡ This man only works 5½ days per week.
§ Four men work only 5
|| Five " " " 5½ " " "

RETURN of Weekly-paid Servants of Railway Companies of the United Kingdom who were on duty during

NAME OF COMPANY.	Class of Servant.	Period.	Total Number of each Class of Servant in the Employ of the Company.	Relating to Servants who were on Duty more than										
				Number of Servants on Duty more than Twelve Hours at a time.		Number of Instances of such Duty exceeding								
						One Hour.		Two Hours.		Three Hours.		Four Hours.		
						Per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
Severn and Wye and Severn Bridge.	Passenger Guards	Sept. 1889	3	3	100*	8	10'66	1	1'33	.	.	2	2'66	
		Mar. 1890	3	2	66'66	1	1'28	1	1'28	.	.	.	.	
	Goods Guards	Sept. 1889	10	10	100*	39	15'60	18	7'20	8	3'20	.	.	
		Mar. 1890	10	8	80*	18	6'92	9	3'46	3	1'15	2	0'77	
	Engine Drivers and Firemen	Sept. 1889	16	16	100*	62	15'50	41	10'25	21	5'25	13	3'25	
		Mar. 1890	17	17	100*	46	10'40	23	5'20	14	3'16	7	1'58	
	Signalmen	Sept. 1889	10	6	60*	95	38'00	12	4'80	7	2'80	1	0'40	
		Mar. 1890	10	5	50*	46	17'69	23	8'85	.	.	.	.	
	Examiners	Sept. 1889	Only one Examiner, who is a joint-man and employed by the Midland											
		Mar. 1890												
South-Eastern Railway	Passenger Guards	Sept. 1889	243	32	13'16	11	'18	11	'18	20	'33	20	'33	
		Mar. 1890	239	12	5'02	5	'03	2	'03	4	'03	1	'01	
	Goods Guards	Sept. 1889	126	23	18'25	24	'76	47	1'49	28	'88	17	'53	
		Mar. 1890	127	22	17'32	4	'12	14	'42	42	1'27	14	'42	
	Engine Drivers and Firemen	Sept. 1889	705	705	100*	1561	8'85	1704	9'66	1712	9'71	1106	6'27	
		Mar. 1890	707	675	95'47	1444	7'85	1820	9'90	1807	9'82	721	3'92	
	Signalmen	Sept. 1889	541	46	8'50	102	'75	39	'29	10	'07	3	'02	
		Mar. 1890	566	37	6'53	32	'21	67	'33	18	'12	1	.	
	Examiners	Sept. 1889	76	5	6'56	4	'21	7	'36	7	'33	1	'05	
		Mar. 1890	76	5	6'56	.	.	10	'43	5	'24	1	.	
Southwold	Passenger and Goods Guards	Sept. 1889	1	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890			.	.	.	.	.	.	.	.		
	Engine Drivers and Firemen	Sept. 1889	.		.	.	.	.	.	.	.	.	.	
		Mar. 1890	3		.	.	.	.	.	.	.	.	.	
South-Western and Midland Railway Companies Somerset and Dorset Joint Line.	Passenger Guards	Sept. 1889	8	.	.	.	.	.	.	.	.	.	.	
		Mar. 1890	8	.	.	.	.	.	.	.	.	.	.	
	Goods Guards	Sept. 1889	38	9	23'68	7	'73	3	'31	.	.	.	.	
		Mar. 1890	38	3	7'89	3	'30	.	.	.	.	.	.	
	Engine Drivers and Firemen	Sept. 1889	109	103	94'5	433	15'89	223	8'18	140	5'14	21	'77	
		Mar. 1890	116	103	88'79	319	10'58	173	5'76	69	2'29	35	1'16	
	Signalmen	Sept. 1889	61	30	49'18	A 281	9	'59	5	'32	.	.	1	'06
		Mar. 1890	61	30	40'18		13	'81		'06	.	.	.	.
	Examiners	Sept. 1889	8	.	.	.	.	.	.	.	.	.	.	.
		Mar. 1890	8	.	.	.	.	.	.	.	.	.	.	.
The instances of duty exceeding 12 hours marked A arise solely from the fact. The percentages are worked out on the basis of 25 working days														
Taff Vale Railway	Passenger Guards and Breaksmen	Sept. 1889	22	Nil	.	.	.	.	.	.	.	.	.	.
		Mar. 1890	22	Nil	.	.	.	.	.	.	.	.	.	.
	Mineral and Goods Guards and Breaksmen	Sept. 1889	316	209	66'13	429	5'22	226	2'75	335	4'07	261	3'17	
		Mar. 1890	327	227	69'41	599	7'04	497	5'84	381	4'43	308	3'62	
	Engine Drivers and Firemen	Sept. 1889	406	329	81'03	668	6'32	569	5'39	412	3'90	370	3'50	
		Mar. 1890	427	361	84'54	751	6'76	616	5'54	399	3'59	394	3'54	
	Signalmen and Police	Sept. 1889	302	67	18'37	50	0'63	596	7'59	.	.	.	.	.
		Mar. 1890	304	67	18'75	50	0'63	596	7'56	.	.	.	.	.
Examiners	Sept. 1889	.	.	.	.	.	.	.	.	.	.	.	.	
	Mar. 1890	.	.	.	.	.	.	.	.	.	.	.	.	

NOTE.—Although Signalmen are shown as working 14 hours per day, one half of the time worked, i.e., when on night duty, viz., 6 p.m. to 8 a.m., under seven hours' rest caused by being unable to deliver trains over at the various docks, and trains

the Months of September 1889 and March 1890 for more than Twelve Hours at a time, &c.—*continued.*

Twelve Hours at a time.				Relating to Servants enumerated in Column No. 5, who, after being on Duty more than Twelve Hours, were allowed to resume Duty with less than Eight Hours' Rest.															
Twelve Hours by				Number of Servants so resuming Duty.	Number of Instances of Duty having been so resumed after														
Five Hours.		Six Hours and upwards.			One Hour's Rest.		Two Hours' Rest.		Three Hours' Rest.		Four Hours' Rest.		Five Hours' Rest.		Six Hours' Rest.		Seven Hours' Rest.		
Daily per-centage.		Daily per-centage.			Monthly per-centage.		Monthly per-centage.		Monthly per-centage.		Monthly per-centage.		Monthly per-centage.		Monthly per-centage.		Monthly per-centage.		
(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)
.	.	.	.	1	33'33	.	.	.	.	.	.	.	.	.	.	.	.	1	33'33
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1	0'25	3	0'75	2	12'50	.	.	.	.	.	.	.	.	.	.	.	.	1	6'25
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
4	1'60	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Railway Company.																			
understood, have been left blank.																			
2	*03	9	*15	}	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1	*01	.	.																
6	*19	4	*12																
5	*15	1	*03																
786	4'34	709	4'02	369	52'31	14	1'08	17	2'44	31	4'39	81	11'48	56	7'94	198	28'08	453	64'25
392	2'13	137	0'74	123	17'39	.	.	.	.	.	.	6	0'84	51	7'21	60	8'48	153	21'64
1	.	4	*03	}	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.																
.	.	.	.																
.	.	.	.																
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.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
37	1'26	13	*48	24	22'02	.	.	.	.	.	.	1	*92	8	7'34	15	13'76	45	41'29
4	*14	6	*20	13	11'21	.	.	.	.	.	.	.	.	5	4'31	1	*86	20	17'24
.	.	.	.	1	1'63	.	.	.	.	.	.	.	.	.	.	.	.	1	1'63
.	.	.	.	1	1'63	.	.	.	.	.	.	.	.	.	.	.	.	1	1'63
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
that the signalmen prefer to work 13 hours on night duty and 11 hours only on day duty.																			
for the month of September 1889, and 26 days for the month of March 1890.																			
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
208	2'53	475	5'78	48	22'06	.	.	.	.	.	.	2	0'95	1	0'47	9	4'30	57	27'17
199	2'34	519	6'10	46	20'26	.	.	.	.	1	0'44	.	.	.	.	10	4'40	38	16'74
313	2'06	602	5'70	147	44'68	.	.	1	*30	.	.	4	1'21	20	6'07	37	11'24	85	25'83
388	3'49	633	5'70	121	33'51	.	.	.	.	.	.	4	1'10	12	3'32	25	6'02	80	22'16
.	.	*11	0'14	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	*5	0'66	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

the other half of time when on duty they work only 10 hours per day, viz., 8.0 a.m. to 6.0 p.m. Where train-men are shown as resuming duty blocked in during such time, trains at a stand, and fair to assume men taking rest.

* Special cases of relief to their mates, owing to indisposition, &c.

NAME OF COMPANY.	Class of Servant.	Period.	Total Number of each Class of Servant in the Employ of the Company.	Relating to Servants who were on Duty more than										
				Number of Servants on Duty more than Twelve Hours at a time.	Number of Instances of such Duty exceeding									
					One Hour.	Two Hours.	Three Hours.	Four Hours.						
									Per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
Talylyn	Passenger Guards	Sept. 1889	1	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	1											
	Engine Drivers and Firemen	Sept. 1889	2											
		Mar. 1890	2											
West Lancashire and Liverpool, Southport and Preston Junction Railways.	Passenger Guards	Sept. 1889	6	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	6											
	Goods Guards	Sept. 1889	3											
		Mar. 1890	3											
	Engine Drivers and Firemen	Sept. 1889	16											
		Mar. 1890	16											
	Signalmen	Sept. 1889	33											
		Mar. 1890	33											
	Examiners	Sept. 1889	6											
		Mar. 1890	6											
West London Extension	Signalmen	Sept. 1889	16	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	16											
West Somerset Mineral Railway.	Passenger Guards	Sept. 1889	1	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	1											
	Goods Guards	Sept. 1889	1											
		Mar. 1890	1											
	Engine Drivers and Firemen	Sept. 1889	2											
		Mar. 1890	2											
	Signalmen	Sept. 1889	4											
		Mar. 1890	4											
Wrexham, Mold, and Connah's Quay.	Passenger Guards	Sept. 1889	2	2	100°	23	46°	5	10°	13	26°	3	6°	
		Mar. 1890	2	2	100°	17	32°69	14	26°92	6	11°55	1	1°92	
	Goods Guards	Sept. 1889	12	12	100°	74	24°66	42	14°	56	18°66	30	10°	
		Mar. 1890	13	13	100°	39	11°54	65	19°37	32	9°32	37	10°95	
	Engine Drivers and Firemen	Sept. 1889	20	20	100°	32	6°4	102	20°4	68	13°6	90	18°	
		Mar. 1890	20	20	100°	24	4°62	48	9°23	104	20°	78	15°	
	Signalmen	Sept. 1889	16	Nil	.	.	.	.	.	.	.	.	.	.
		Mar. 1890	19	Nil	.	.	.	.	.	.	.	.	.	.
	Examiners	Sept. 1889	3	Nil	.	.	.	.	.	.	.	.	.	.
		Mar. 1890	3	Nil	.	.	.	.	.	.	.	.	.	.
	SCOTLAND: Ayrshire and Wigtownshire.	Passenger Guards	Sept. 1889	1	1	100°	.	.	14	56°	2	8°	.	.
			Mar. 1890	1	1	100°	.	.	16	61°54	1	3°85	.	.
		Goods Guards	Sept. 1889	4	2	50°	.	.	20	20°	8	8°	.	.
			Mar. 1890	4	2	50°	1	°96	17	16°35	6	5°77	5	4°81
		Engine Drivers and Firemen	Sept. 1889	8	6	75°	.	.	36	18°	13	6°5	1	°5
			Mar. 1890	9	6	66°66	2	°85	28	11°96	7	3°	3	1°28
Signalmen		Sept. 1889	4	4	100°	18	18°	63	63°	15	15°	.	.	
		Mar. 1890	5	4	80°	11	8°46	64	49°23	6	4°61	.	.	
Examiners		Sept. 1889	1	.	.	.	.	.	.	.	.	.	.	.
		Mar. 1890	1	.	.	.	.	.	.	.	.	.	.	.

RETURN of Weekly-paid Servants of Railway Companies of the United Kingdom who were on Duty during

NAME OF COMPANY.	Class of Servant.	Period.	Total Number of each Class of Servant in the Employ of the Company.	Relating to Servants who were on Duty more than										
				Number of Servants on Duty more than Twelve Hours at a Time.	Number of Instances of such Duty exceeding									
					One Hour.	Two Hours.	Three Hours.	Four Hours.						
													Per- centage.	Daily per- centage.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
Caledonian	Passenger Guards	Sept. 1889	160	2	1'25	4	'10	.	.	.	.	.	.	
		Mar. 1890	157	Nil	.	.	.	.	.	.	.	.	.	
	Goods Guards	Sept. 1889	536	258	48'13	411	3'06	47	'35	10	'07	2	'01	
		Mar. 1890	588	312	53'06	500	3'27	101	'66	23	'15	10	'06	
	Engine Drivers and Firemen	Sept. 1889	1,324	1,167	38'14	6,820	20'60	3,529	10'66	1,048	3'17	322	'97	
		Mar. 1890	1,426	1,216	35'27	7,320	19'74	2,968	8'01	828	2'23	184	'50	
	Signalmen	Sept. 1889	826	1	'12	2	.	1	.	.	.	.	.	
		Mar. 1890	850	5	'58	1	.	4	'01	.	.	.	.	
	Examiners	Sept. 1889	105	11	10'48	73	2'78	28	1'07	2	'07	1	'04	
		Mar. 1890	105	7	6'67	25	'92	27	'99	2	'07	.	.	
	City of Glasgow Union	Signalmen	Sept. 1889	36	Nil	.	.	.	.	.	.	.	.	.
			Mar. 1890	36		.	.	.	.	.	.	.	.	.
Dundee and Arbroath Joint Railway Committee.	Passenger Guards	Sept. 1889	}	The servants of the Caledonian and North British Companies respectively.										
		Mar. 1890												
	Goods Guards	Sept. 1889	}											
		Mar. 1890												
	Engine Drivers and Firemen	Sept. 1889	}											
		Mar. 1890												
	Signalmen	Sept. 1889	38		Nil	.	.	.	.	.	.	.	.	
		Mar. 1890	38			.	.	.	.	.	.	.	.	
	Examiners	Sept. 1889	}		The servants of the Caledonian and North British Companies respectively									
		Mar. 1890												
Glasgow and Kilmarnock Joint Line Committee.	Passenger Guards	Sept. 1889	1	1	100'00	.	.	2	8'00	.	.	.	.	
		Mar. 1890	1	Nil	.	.	.	.	.	.	.	.	.	
	Goods Guards	Sept. 1889	6	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	6	Nil	.	.	.	.	.	.	.	.	.	
	Engine Drivers and Firemen	Sept. 1889	3	1	33'33	.	.	4	5'32	.	.	.	.	
		Mar. 1890	3	Nil	.	.	.	.	.	.	.	.	.	
	Signalmen	Sept. 1889	40	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	40	Nil	.	.	.	.	.	.	.	.	.	
	Glasgow and Paisley Joint Line Committee.	Engine Drivers and Firemen	Sept. 1889	4	2	50'00	50	50'00	Nil	.	.	.	.	.
			Mar. 1890	4	2	50'00	50	48'08	Nil	.	.	.	.	.
Signalmen		Sept. 1889	49	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	49	Nil	.	.	.	.	.	.	.	.	.	

* Wholly occupied in shunting operations in goods yard.

RETURN of Weekly-paid Servants of Railway Companies of the United Kingdom who were on Duty during

NAME OF COMPANY.	Class of Servant.	Period.	Total Number of each Class of Servant in the Employ of the Company.	Relating to Servants who were on Duty more than									
				Number of Servants on Duty more than Twelve Hours at a time.		Number of Instances of such Duty exceeding							
						One Hour.		Two Hours.		Three Hours.		Four Hours.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Glasgow and South-Western	Passenger Guards	Sept. 1889	73	3	4'10	3	'16	.	.	.	.	.	.
		Mar. 1890	71	.	.	.	.	.	.	.	.	.	.
	Goods Guards	Sept. 1889	223	72	32'28	81	1'45	50	'89	15	'26	1	'01
		Mar. 1890	219	74	33'78	135	2'37	25	'43	4	'07	.	.
	Engine Drivers and Firemen	Sept. 1889	588	532	90'47	2,368	16'10	1,298	8'82	532	3'61	142	'96
		Mar. 1890	578	518	89'61	2,562	17'04	1,154	7'67	598	2'64	112	'74
	Signalmen	Sept. 1889	381	14	3'67	37	'38	6	'06	1	'01	.	.
		Mar. 1890	385	13	3'37	18	'17	1	'009	.	.	1	'009
	Examiners	Sept. 1889	None on duty over twelve hours.	.	.	.	.	.	.	.	.	.	.
		Mar. 1890		.	.	.	.	.	.	.	.	.	.
Great North of Scotland	Passenger Guards	Sept. 1889*	53	Nil	.	.	.	.	.	.	.	.	.
		Mar. 1890	51	Nil	.	.	.	.	.	.	.	.	.
	Goods Guards	Sept. 1889	33	Nil	.	.	.	.	.	.	.	.	.
		Mar. 1890	32	Nil	.	.	.	.	.	.	.	.	.
	Engine Drivers and Firemen	Sept. 1889	134	105	78'36	423	12'62	509	15'19	55	1'64	33	'98
		Mar. 1890	143	54	37'76	119	3'20	88	2'36	40	1'08	2	'05
	Signalmen	Sept. 1889	56	Nil	.	.	.	.	.	.	.	.	.
		Mar. 1890	62	Nil	.	.	.	.	.	.	.	.	.
	Examiners	Sept. 1889	15	Nil	.	.	.	.	.	.	.	.	.
		Mar. 1890	15	Nil	.	.	.	.	.	.	.	.	.
Highland	Passenger Guards	Sept. 1889	23	No case of over twelve hours at a time.									
		Mar. 1890	23										
	Goods Guards	Sept. 1889	39										
		Mar. 1890	37										
	Engine Drivers and Firemen	Sept. 1889	120										
		Mar. 1890	120										
	Signalmen	Sept. 1889	117										
		Mar. 1890	117										
	Examiners	Sept. 1889	19										
		Mar. 1890	19										
North British Railway Com- pany.	Passenger Guards	Sept. 1889	194	15	7'78	88	1'81	55	1'13	66	1'36	9	'18
		Mar. 1890	193	16	8'29	142	2'82	32	'63	36	'71	2	'03
	Goods Guards	Sept. 1889	597	424	71'02	2,206	14'78	1,772	11'87	906	6'07	421	2'82
		Mar. 1890	645	455	70'54	2,519	15'02	1,646	9'81	1,035	6'17	554	3'30
	Engine Drivers and Firemen	Sept. 1889	1,503	1,040	69'19	3,870	10'29	3,944	10'49	2,952	7'85	1,665	4'43
		Mar. 1890	1,593	1,121	70'37	4,078	9'84	4,001	9'66	3,177	7'67	1,878	4'53
	Signalmen	Sept. 1889	989	56	5'66	405	1'63	463	1'87	103	'41	60	'24
		Mar. 1890	1,023	61	5'93	522	1'95	342	1'27	62	'23	23	'08
	Examiners	Sept. 1889	132	18	13'63	34	1'03	57	1'72	25	'75	.	.
		Mar. 1890	135	13	9'62	36	1'02	52	'48	26	'74	.	.

* The month of September 1889 included the Aberdeen annual holiday.

RETURN of Weekly-paid Servants of Railway Companies of the United Kingdom who were on Duty during

NAME OF COMPANY.	Class of Servant.	Period.	Total Number of each Class of Servant in the Employ of the Company.	Relating to Servants who were on duty more than										
				Number of Servants on Duty more than Twelve Hours at a time.	Number of Instances of such Duty exceeding									
					One Hour.		Two Hours.		Three Hours.		Four Hours.			
					Per- centage.	Daily per centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
Portpatrick and Wigtown- shire Railways Joint Com- mittee.	Passenger Guards - {	Sept. 1889	3	2	66·6	3	4	.	.	.	.	.	.	
		Mar. 1890	3	1	33·3	2	2·56	.	.	.	.	.	.	
	Engine Drivers and Firemen - {	Sept. 1889	6	6	100	.	.	4	2·6	17	11·3	29	19·3	
		Mar. 1890	6	6	100	1	·641	24	15·38	52	33·3	2	1·28	
	Signalmen - {	Sept. 1889	5	1	20	18	14·4	1	·8	.	.	.	.	
		Mar. 1890	5	1	20	13	10	1	·76	.	.	.	.	
IRELAND :														
Ballycastle Railway - -	Passenger Guards - {	Sept. 1889	2	.	.	.	.	.	.	.	.	.	.	
		Mar. 1890	2	.	.	.	.	.	.	.	.	.	.	
	Engine Drivers and Firemen - {	Sept. 1889	4	2	50	2	2	.	.	.	.	.	.	
		Mar. 1890	4	2	50	2	1·92	.	.	.	.	.	.	
	Signalmen - {	Sept. 1889	3	.	.	.	.	.	.	.	.	.	.	
		Mar. 1890	3	.	.	.	.	.	.	.	.	.	.	
Belfast and County Down -	Passenger Guards - {	Sept. 1889	8	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	8		.	.	.	.	.	.	.	.	.	
	Goods Guards - {	Sept. 1889	4	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	4		.	.	.	.	.	.	.	.	.	
	Engine Drivers and Firemen - {	Sept. 1889	28	14	50·00	4	·28	4	·28	2	·14	2	·14	
		Mar. 1890	28	10	35·71	4	·26	4	·26	.	.	.	.	
	Signalmen - {	Sept. 1889	10	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	10		.	.	.	.	.	.	.	.	.	
	Examiners - {	Sept. 1889	2	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	2		.	.	.	.	.	.	.	.	.	
Belfast and Northern Coun- ties Railway.	Passenger Guards - {	Sept. 1889	22	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	22	Nil	.	.	.	.	.	.	.	.	.	
	Goods Guards - {	Sept. 1889	7	1	14·28	.	.	25	14·28	.	.	.	.	
		Mar. 1890	7	1	14·28	.	.	26	14·28	.	.	.	.	
	Engine Drivers and Firemen - {	Sept. 1889	89	78	87·64	41	1·84	127	5·71	179	8·04	123	5·53	
		Mar. 1890	96	82	85·42	133	5·54	165	6·88	137	5·71	47	1·96	
	Signalmen - {	Sept. 1889	45	8	17·7	125	11·11	50	4·44	.	.	25	2·22	
		Mar. 1890	45	8	17·7	130	11·11	52	4·44	.	.	26	2·22	
	Examiners - {	Sept. 1889	10	3	30·00	.	.	50	20·00	25	10·00	.	.	
		Mar. 1890	11	1	9·09	.	.	25	9·09	.	.	.	.	

* Some of the drivers and firemen appear to have long hours, but in each of these long turns there are considerable intervals at

† In the month of September there were 594 instances of engine drivers and firemen being on duty for a period exceeding 12 consecutive hours

the Months of September 1889 and March 1890 for more than Twelve Hours at a Time, &c.—*continued.*

Twelve Hours at a time.				Relating to Servants enumerated in Column No. 5, who, after being on Duty more than Twelve Hours, were allowed to resume Duty with less than Eight Hours' Rest.															
Twelve Hours by				Number of Servants so resuming Duty.		Number of Instances of Duty having been so resumed after													
Five Hours.		Six Hours and upwards.				One Hour's Rest.		Two Hours' Rest.		Three Hours' Rest.		Four Hours' Rest.		Five Hours' Rest.		Six Hours' Rest.		Seven Hours' Rest.	
Daily per-centage.		Daily per-centage.		Per-centage.		Monthly per-centage.		Monthly per-centage.		Monthly per-centage.		Monthly per-centage.		Monthly per-centage.		Monthly per-centage.		Monthly per-centage.	
(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
7	4'6	1	'6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	1	'641	1	16'6	.	.	.	.	1	16'6	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	Nil		.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	Nil		.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	Nil		.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	Nil		.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	Nil		.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	Nil		.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	Nil		.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	Nil		.	.	.	.	.	.	.	.	.	.	.	.	.	.
80	3'59	44	1'88	6	7'72	.	.	.	.	.	.	.	.	.	.	2	'33	16	2'68†
66	2'75	31	1'29	1	1'22	.	.	.	.	.	.	.	.	.	.	.	.	1	'19
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

terminal stations (in some instances as much as nine hours); the men only get one day of these long turns, say once a week.
and of this number in 16 cases work was resumed with seven hours rest only. The above per-centage is therefore calculated thus $\frac{16 \times 100}{594} = 2'69$.

RETURN of Weekly-paid Servants of Railway Companies of the United Kingdom who were on Duty during

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				Number of Servants on Duty more than Twelve Hours at a Time.	Number of Instances of such Duty exceeding									
					One Hour.		Two Hours.		Three Hours.		Four Hours.			
					Per- centage	Daily per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
Bessbrook and Newry Tran- way,	Passenger Guards - {	Sept. 1889	2	1	50'	4	8'0	.	.	.	.	.	.	
		Mar. 1890	2	1	50'	5	9'61	.	.	.	.	.	.	
	Goods Guards - {	Sept. 1889	2	.	.	.	.	.	.	.	.	.	.	
		Mar. 1890	2	.	.	.	.	.	.	.	.	.	.	
	Engine Drivers and Firemen - {	Sept. 1889	2	1	50'	4	8'	.	.	.	.	.	.	
		Mar. 1890	2	1	50'	5	9'61	.	.	.	.	.	.	
	Signalmen - {	Sept. 1889	.	.	.	.	.	.	.	.	.	.	.	
		Mar. 1890	.	Traffic is suspended for 1 hour daily to allow men to get dinner, 1.45										
	Examiners - {	Sept. 1889	1	.	.	.	.	.	.	.	.	.	.	
		Mar. 1890	1	.	.	.	.	.	.	.	.	.	.	
Castlederg and Victoria Bridge Tramway Company.	Passenger Guards - {	Sept. 1889	.	Nil	.	.	.	.	.	.	.	.		
		Mar. 1890	1		.	.	.	.	.	.	.			
	Engine Drivers and Firemen - {	Sept. 1889	.		.	.	.	.	.	.	.			
		Mar. 1890	2		.	.	.	.	.	.	.			
Cavan, Leitrim, and Roscom- mon Light Railway and Tramway.	Passenger and Goods Guards (all mixed trains)	Sept. 1889	3	2	66'66	1	1'33	.	.	.	.	.		
		Mar. 1890	3	2	66'66	2	2'56	.	.	.	.	.		
	Goods Guards - {	Sept. 1889	*1	1	100	.	.	.	1	4'	.	.		
		Mar. 1890	1	1	100	.	.	.	.	.	.	.		
	Engine Drivers and Firemen - {	Sept. 1889	9	6	66'66	25	11'11	4	1'77	2	'88	2	'88	
		Mar. 1890	9	6	66'66	24	10'26	14	5'98	.	.	.	.	
	Examiners - {	Sept. 1889	1	.	.	.	.	.	.	.	.	.		
		Mar. 1890	1	.	.	.	.	.	.	.	.	.		
	Cork, Bandon, and South Coast.	Passenger Guards - {	Sept. 1889	9	2	22'22	.	.	.	.	.	.	2	'88
			Mar. 1890	9	3	33'33	.	.	.	.	3	1'28	.	.
Goods Guards - {		Sept. 1889	1	1	100	2	8'	.	.	.	.	.	.	
		Mar. 1890	1	1	100	1	3'85	.	.	.	.	.	.	
Engine Drivers and Firemen - {		Sept. 1889	24	22	91'66	8	1'33	4	'66	4	'66	6	1'	
		Mar. 1890	24	Nil	.	.	.	.	.	.	.	.	.	
Signalmen - {		Sept. 1889	5	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	5	Nil	.	.	.	.	.	.	.	.	.	
Examiners - {		Sept. 1889	2	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	2	Nil	.	.	.	.	.	.	.	.	.	

* On duty once as guard at a fair, rest of month as porter at station.

RETURN of Weekly-paid Servants of Railway Companies of the United Kingdom who were on Duty during

NAME OF COMPANY.	Class of Servant.	Period.	Total Number of each Class of Servant in the Employ of the Company.	Relating to Servants who were on Duty more than										
				Number of Servants on Duty more than Twelve Hours at a time.	Number of Instances of such Duty exceeding									
					One Hour.	Two Hours.		Three Hours.		Four Hours.				
						Per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
Dundalk, Newry, and Greenore Railway.	Passenger Guards	Sept. 1889	3	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	3											
	Goods Guards	Sept. 1889	Nil											
		Mar. 1890	Nil											
	Engine Drivers and Firemen	Sept. 1889	6											
		Mar. 1890	6											
	Signalmen	Sept. 1889	3											
		Mar. 1890	3											
	Examiners	Sept. 1889	1											
		Mar. 1890	1											
Finn Valley	Passenger Guards	Sept. 1889	1	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	1											
	Goods Guards	Sept. 1889	1											
		Mar. 1890	1											
	Engine Drivers and Firemen	Sept. 1889	.											
		Mar. 1890	.											
	Signalmen	Sept. 1889	1											
		Mar. 1890	1											
	Examiners	Sept. 1889	1											
		Mar. 1890	1											
Great Northern Railway Company of Ireland.	Passenger Guards	Sept. 1889	56	.	.	.	.	.	.	.	.	.	.	
		Mar. 1890	56	.	.	.	.	.	.	.	.	.	.	
	Goods Guards	Sept. 1889	41	3	7'32	.	.	.	.	.	.	3	29	.
		Mar. 1890	41	3	7'32	.	.	.	.	.	.	3	29	.
	Engine Drivers and Firemen	Sept. 1889	208	90	43'27	246	4'54	109	2'09	5	1'09	61	1'16	.
		Mar. 1890	208	94	45'19	278	5'14	142	2'47	4	1'73	55	1'01	.
	Signalmen	Sept. 1889	115	.	.	.	.	.	.	.	.	.	.	.
		Mar. 1890	115	2	1'74	1	1'03	1	1'03	.	.	.	.	.
	Examiners	Sept. 1889	21	6	28'57	.	.	6	1'14	.	.	.	.	.
		Mar. 1890	21	6	28'57	.	.	6	1'09	.	.	.	.	.
Great Southern and Western Railway.	Passenger Guards	Sept. 1889	.	.	.	.	.	.	.	.	.	.	.	
		Mar. 1890	.	.	.	.	.	.	.	.	.	.	.	
	Goods Guards	Sept. 1889	49	37	75'51	26	2'12	7	1'57	4	1'32	.	.	
		Mar. 1890	49	35	71'43	25	2'04	7	1'55	2	1'16	1	1'08	.
	Engine Drivers and Firemen	Sept. 1889	235	148	62'98	818	13'92	234	3'98	18	1'30	6	1'10	.
		Mar. 1890	242	150	61'99	810	12'87	208	3'30	34	1'54	16	1'25	.
	Signalmen	Sept. 1889	.	.	.	.	.	.	.	.	.	.	.	.
		Mar. 1890	.	.	.	.	.	.	.	.	.	.	.	.
	Examiners	Sept. 1889	19	.	.	.	.	.	.	.	.	.	.	.
		Mar. 1890	19	.	.	.	.	.	.	.	.	.	.	.

* Loco. engine power is supplied by Great

RETURN of Weekly-paid Servants of Railway Companies of the United Kingdom who were on Duty during

NAME OF COMPANY.	Class of Servant.	Period.	Total Number of each Class of Servant in the Employ of the Company.	Relating to Servants who were on Duty more than										
				Number of Servants on Duty more than Twelve Hours at a time.	Number of Instances of such Duty exceeding									
					One Hour.	Two Hours.	Three Hours.	Four Hours.	Daily per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
Listowel and Ballybunion Railway.	Passenger Guards -	Sept. 1889	1	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890												
	Engine Drivers and Firemen -	Sept. 1889	3											
		Mar. 1890												
Londonderry and Lough Swilly—Letterkenny.	Passenger Guards -	Sept. 1889	2	Nil	.	.	.	.	.	.	.	.	.	
		Mar. 1890	2											
	Engine Drivers and Firemen -	Sept. 1889	2											
		Mar. 1890	2											
	Signalmen -	Sept. 1889	3											
		Mar. 1890	3											
Examiners -	Sept. 1889	2												
	Mar. 1890	2												
Midland Great Western	Passenger Guards -	Sept. 1889	32	1	3'12	.	.	.	.	.	.	.	.	.
		Mar. 1890	32	.	.	.	.	.	.	.	.	.	.	.
	Goods Guards -	Sept. 1889	33	25	75'75	21	2'55	57	6'01	66	8'	13	1'51	
		Mar. 1890	36	15	41'66	32	3'42	22	2'35	8	'85	2	'21	
	*Engine Drivers and Firemen -	Sept. 1889	154	106	68'8	448	11'04	293	7'74	66	1'71	18	'47	
		Mar. 1890	158	118	74'6	460	11'19	314	7'64	86	2'09	18	'44	
	Signalmen -	Sept. 1889	78	.	.	.	.	.	.	.	.	.	.	.
		Mar. 1890	81	.	.	.	.	.	.	.	.	.	.	.
	Examiners -	Sept. 1889	6	Nil	.	.	.	.	.	.	.	.	.	.
		Mar. 1890	6	Nil	.	.	.	.	.	.	.	.	.	.
Sligo, Leitrim, and Northern Counties Railways.	Passenger and Goods Guards -	Sept. 1889	3	Nil	.	.	.	.	.	.	.	.	.	.
		Mar. 1890	3	Nil	.	.	.	.	.	.	.	.	.	.
	Goods Guards -	Sept. 1889	Nil	.	.	.	.	.	.	.	.	.	.	
		Mar. 1890												
	†Engine Drivers and Firemen -	Sept. 1889	8	6	75'	.	.	.	.	.	.	6	3'	
		Mar. 1890	8	2	25'	.	.	.	.	.	.	2	'16	
	Examiners -	Sept. 1889	1	.	.	.	.	.	.	.	.	.	.	.
		Mar. 1890	1	.	.	.	.	.	.	.	.	.	.	.
Waterford and Central Ire- land.	Passenger Guards -	Sept. 1889	3	Nil	.	.	.	.	.	.	.	.	.	.
		Mar. 1890	3	Nil	.	.	.	.	.	.	.	.	.	.
	Goods Guards -	Sept. 1889	1	Nil	.	.	.	.	.	.	.	.	.	.
		Mar. 1890	1	Nil	.	.	.	.	.	.	.	.	.	.
	Engine Drivers and Firemen -	Sept. 1889	15	12	80'0	3	0'80	2	0'53	15	4'00	47	12'53	
		Mar. 1890	15	10	66'66	2	0'51	2	0'51	20	5'12	32	8'20	
	Signalmen -	Sept. 1889	5	1	20'0	2	1'00	1	0'80	2	1'00	.	.	.
		Mar. 1890	5	1	20'0	8	6'15	3	2'30	4	3'07	1	0'73	.
	Examiners -	Sept. 1889	1	Nil	.	.	.	.	.	.	.	.	.	.
		Mar. 1890	1	Nil	.	.	.	.	.	.	.	.	.	.

* 1. In all cases, one hour before starting and one hour after arrival of trains have been added to the actual running time of every driver and
2. Referring to the drivers and firemen enumerated in columns 4 and 5, these men worked during the two months under consideration, 1,276
respectively, or 19'67

† The 12 hours are calculated as being

the Months of September 1889 and March 1890 for more than Twelve Hours at a time, &c.—*continued*.

Twelve Hours at a time.

Relating to Servants enumerated in Column No. 5, who, after being on Duty more than Twelve Hours, were allowed to resume Duty with Less than Eight Hours' Rest.

Twelve Hours by

Number of Instances of Duty having been so resumed after

Five Hours.		Six Hours and upwards.		Number of Servants so resuming Duty.		One Hour's Rest.		Two Hours' Rest.		Three Hours' Rest.		Four Hours' Rest.		Five Hours' Rest.		Six Hours' Rest.		Seven Hours' Rest.	
	Daily per-centage.		Daily per-centage.		Per-centage.		Monthly per-centage.		Monthly per-centage.		Monthly per-centage.		Monthly per-centage.		Monthly per-centage.		Monthly per-centage.		Monthly per-centage.
(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	1	12	1	3.12	.	.	.	.	.	.	.	.	.	.	1	3.12	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
5	60	4	48	4	12.12	.	.	1	3.03	.	.	1	3.03	.	.	1	3.03	1	3.03
2	21	4	42	2	5.5	.	.	.	.	1	2.77	.	.	.	.	.	.	1	2.77
8	2	4	1	19	12.84	2	1.3	2	1.3	2	1.3	.	.	.	.	10	6.49	18	11.69
2	05	12	29	17	10.76	.	.	.	.	.	.	2	1.26	2	1.26	8	5.06	14	8.86
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
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.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
18	4.80	8	2.13	8	53.53	.	.	4	26.66	2	13.33	.	.	.	.	.	.	14	93.33
16	4.10	26	6.66	10	66.66	4	26.66	.	.	.	.	4	26.66	6	40.0	4	26.66	14	93.33
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2	40.0
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	20.0	4	80.0
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

fireman referred to in this return.
days in September 1889 and 4,240 days in March 1890, and the number of instances where their time on duty exceeded 12 hours were 842 and 896 and 21.13 per cent.
continuous, but actually are not so.

RETURN of Weekly-paid Servants of Railway Companies of the United Kingdom who were on Duty during

NAME OF COMPANY.	Class of Servant.	Period.	Total Number of each Class of Servant in the Employ of the Company.	Relating to Servants who were on Duty more than																		
				Number of Servants on Duty more than Twelve Hours at a time.	Number of Instances of such Duty exceeding																	
					One Hour.	Two Hours.	Three Hours.	Four Hours.														
													Per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)									
Waterford and Limerick	Passenger Guards	{ Sept. 1889	.	.	.	.	.	.	.	.	.	.	.									
		{ Mar. 1890	.	.	.	.	.	.	.	.	.	.	.									
	Goods Guards	{ Sept. 1889	.	.	.	.	.	.	.	.	.	.	.									
		{ Mar. 1890	.	.	.	.	.	.	.	.	.	.	.									
	Engine Drivers and Firemen	{ Sept. 1889	64	38	59'37	12	'75	72	4'50	60	3'75	14	'87									
		{ Mar. 1890	64	44	63'75	Nil	.	84	5'04	80	4'80	14	'84									
	Signalmen	{ Sept. 1889	.	.	.	.	.	.	.	.	.	.	.									
		{ Mar. 1890	.	.	.	.	.	.	.	.	.	.	.									
	Examiners	{ Sept. 1889	8	Nil	.	.	.	.	.	.	.	.	.									
		{ Mar. 1890	8	Nil	.	.	.	.	.	.	.	.	.									
	Waterford and Tramore	Passenger Guards	{ Sept. 1889	2	Nil	.	.	.	.	.	.	.	.									
			{ Mar. 1890	2																		
Engine Drivers and Firemen		{ Sept. 1889	3																			
		{ Mar. 1890	3																			
Signalmen		{ Sept. 1889	1																			
		{ Mar. 1890	1																			
Examiners		{ Sept. 1889	1																			
		{ Mar. 1890	1																			
Waterford, Dungarvan, and Lismore.		Passenger Guards	{ Sept. 1889	2										Nil	.	.	.	.	.	.	.	.
			{ Mar. 1890	2																		
	Goods Guards	{ Sept. 1889	1																			
		{ Mar. 1890	1																			
	Engine Drivers and Firemen	{ Sept. 1889	8																			
		{ Mar. 1890	8																			
	Signalmen	{ Sept. 1889	5																			
		{ Mar. 1890	5																			
	Examiners	{ Sept. 1889	1																			
		{ Mar. 1890	1																			
	West Carbery Tramways and Light Railways.	Passenger Guards	{ Sept. 1889	2	Nil	.	.	.	.	.	.	.	.									
			{ Mar. 1890	2																		
Engine Drivers and Firemen		{ Sept. 1889	2—2																			
		{ Mar. 1890	2—2																			
Examiners		{ Sept. 1889	1																			
		{ Mar. 1890	1																			

1 63598.

RETURN of Weekly-paid Servants of Railway Companies of the United Kingdom who were on Duty during

NAME OF COMPANY.	Class of Servant.	Period.	Total Number of each Class of Servant in the Employ of the Company.	Relating to Servants who were on Duty more than																			
				Number of Servants on Duty more than Twelve Hours at a time.	Number of Instances of such Duty exceeding																		
					One Hour.	Two Hours.	Three Hours.	Four Hours.	Daily per- centage.	Daily per- centage.	Daily per- centage.	Daily per- centage.											
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)										
West Clare	Passenger Guards -	Sept. 1889	2	None.	}	None of these servants have been on duty more than																	
		Mar. 1890	2	do.																			
	Engine Drivers and Firemen -	Sept. 1889	6	do.																			
		Mar. 1890	6	do.																			
	Signalmen (Ordinary Porters work the signals).																						
	Examiners -	Sept. 1889	1	None																			
		Mar. 1890	1	do.																			
	West Donegal	Passenger Guards -	Sept. 1889	1										}	Nil								
			Mar. 1890	1																			
		Goods Guards -	Sept. 1889	1																			
Mar. 1890			1																				
Engine Drivers and Firemen -		Sept. 1889	2 Drivers																				
			2 Firemen																				
		Mar. 1890	2 Drivers																				
			2 Firemen																				
Signalmen -		Sept. 1889	2																				
		Mar. 1890	2																				
Examiners -		Sept. 1889	1																				
		Mar. 1890	1																				

[illegible]

RAILWAYS
(SIGNAL ARRANGEMENTS AND SYSTEMS OF WORKING).

RETURN

(In pursuance of "The Railway Regulation Act (Return of Signal Arrangement Working, &c.), 1873,")

BY

RAILWAY COMPANIES IN THE UNITED KINGDOM

RELATIVE TO

(1.) The Interlocking and Concentrating of Signal and Point
Levers, &c.,

AND TO

(2.) The System or Systems upon which the Lines of Railway
under their Control were Worked,

ON 31ST DECEMBER 1889.

Presented to both Houses of Parliament by Command of Her Majesty.



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1890.

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Board of Trade,
May 1890.

HENRY G. CALCRAFT.

RETURNS by RAILWAY COMPANIES in the UNITED KINGDOM with respect to CONNEXIONS on the LINES of RAILWAY under their Control, viz.—1. The Number of Cases in which any Passenger Line is connected with or crossed on the Level by—(a.) Any other Passenger Line; (b.) Any Goods Line; (c.) Any Siding; (d.) Any Cross-over Road:—2. The Number of Cases in which such Connexions or Crossings have been perfected, so as to comply with the Requirements which the Board of Trade Inspecting Officers are now in the habit of making, in the case of New Lines, with respect to the following Matters:—(a.) Concentration of Signal and Point Levers; (b.) Interlocking of those Levers; (c.) The addition of Safety Points for Goods Lines and Sidings.

NAME OF RAILWAY.	Number of Cases in which any Passenger Line is connected with or crossed on the Level by				Number of Cases in which the usual Requirements of the Inspecting Officers of the Board of Trade have or have not been complied with in the following respects:					
	Any other Passenger Line.	Any Goods Line.	Any Siding.	Any Cross-over Road.	Concentration of Signal and Point Levers.		Interlocking of Signal and Point Levers.		Addition of Safety Points in case of Goods Lines and Sidings.	
					Have.	Have not.	Have.	Have not.	Have.	Have not.
ENGLAND AND WALES.	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>h</i>	<i>k</i>	<i>l</i>
AYLESBURY AND BUCKINGHAM.	—	—	7	—	—	7	—	7	1	6
BRECON AND MERTHYR:										
Main Line - - - -	34	7	61	16	89	29	87	31	68	—
Branches - - - -	13	5	30	2	35	15	35	15	35	—
Total - - - -	47	12	91	18	124	44	122	46	103	—
CAMBRIAN:										
Main Line - - - -	78	3	194	28	145	158	145	158*	52	145
Branches - - - -	1	—	23	1	2	23	2	23†	3	20
Total - - - -	79	3	217	29	147	181	147	181	55	165
CENTRAL WALES AND CARMARTHEN JUNCTION.	2	—	20	—	11	11	11	11	4	16
CHARNOOD FOREST - -	2	1	7	—	10	—	10	—	8	—
CHESHIRE LINES - - -	40	18	193	64	315	—	315	—	208	3‡
CLEATOR AND WORKINGTON JUNCTION.	17	7	31	13	67	1	67	1	38	—
COCKERMOUTH, KESWICK, AND PENRITH.	14	1	17	3	31	4	35	—	17	1§
COLNE VALLEY AND HALSTEAD	2	—	9	3	5	9	5	9	6	3
CORRIS - - - - -	—	3	8	—	11	—	11	—	11	—
EAST AND WEST JUNCTION -	28	—	17	6	51	—	51	—	17	—
EASTERN AND MIDLANDS:										
Main Line - - - -	32	3	40	3	77	1	77	1	43	—
Branches - - - -	11	1	17	—	27	2	27	2	18	—
Total - - - -	43	4	57	3	104	3	104	3	61	—
FESTINIOG - - - - -	—	4	27	—	9	22	21	10	9	22
FURNESS:										
Main Line - - - -	21	1	135	68	200	25	198	27	129	7
Branches - - - -	3	2	40	10	38	17	39	16	29	13
Total - - - -	24	3	175	78	238	42	237	43	158	20
GREAT EASTERN:										
Main Lines - - - -	144	20	496	214	850	24	850	24	490	26
Branches - - - -	333	37	908	233	1,331	180	1,326	185	830	115
Total - - - -	477	57	1,404	447	2,181	204	2,176	209	1,320	141
GREAT NORTHERN:										
Main Lines - - - -	140	115	410	246	891	20	891	20	525	—
Branches - - - -	96	27	377	163	585	78	585	78	404	—
Joint Lines - - - -	13	3	46	36	81	17	81	17	49	—
Total - - - -	249	145	833	445	1,557	115	1,557	115	978	—

* 65 of these are padlocked.
† 14 of these are padlocked.
‡ Passenger sidings, 2 of which are provided with interlocked scotches.
§ Turntable siding protected by scotch block worked from cabin.

NAME OF RAILWAY.	Number of Cases in which any Passenger Line is connected with or crossed on the Level by				Number of Cases in which the usual Requirements of the Inspecting Officers of the Board of Trade have or have not been complied with in the following respects :					
	Any other Passenger Line.	Any Goods Line.	Any Siding.	Any Cross-over Road.	Concentration of Signal and Point Levers.		Interlocking of Signal and Point Levers.		Addition of Safety Points in case of Goods Lines and Sidings.	
					Have.	Havenot.	Have.	Havenot.	Have.	Havenot.
ENGLAND AND WALES—continued.										
GREAT NORTHERN AND GREAT EASTERN JOINT:	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>h</i>	<i>k</i>	<i>l</i>
Main Line - - - - -	9	4	99	56	166	2	166	2	103	—
Branches - - - - -	4	—	25	7	36	—	36	—	25	—
Total - - - - -	13	4	124	63	202	2	202	2	128	—
GREAT NORTHERN AND LONDON AND NORTH-WESTERN : NOTTINGHAM JOINT LINES.										
Main Line - - - - -	8	—	42	6	56	—	56	—	42	—
Branch - - - - -	—	—	3	—	3	—	3	—	3	—
Total - - - - -	8	—	45	6	59	—	59	—	45	—
GREAT WESTERN:										
Main Line - - - - -	338	100	1,645	595	2,484	194	2,546	132	1,627	118
Branches - - - - -	400	87	1,333	226	1,691	355	1,797	249	1,193	227
Total - - - - -	738	187	2,978	821	4,175	549	4,343	381	2,820	345
HAMMERSMITH AND CITY -										
	4	1	5	8	16	2	16	2	6	—
HULL, BARNSELY, AND WEST RIDING JUNCTION RAILWAY AND DOCK:										
Main Line - - - - -	5	3	60	32	100	—	100	—	63	—
Branches - - - - -	—	—	9	4	13	—	13	—	9	—
Total - - - - -	5	3	69	36	113	—	113	—	72	—
ISLE OF WIGHT - - - - -										
	12	3	16	2	23	10	25	8	18	1
ISLE OF WIGHT (CENTRAL) -										
	8	2	15	2	18	9	22	5	13	—
LANCASHIRE AND YORKSHIRE -										
	234	49	1,273	675	2,226	5	2,226	5	1,322	—
LANCASHIRE AND YORKSHIRE AND LONDON AND NORTH-WESTERN JOINT LINES :										
NORTH UNION - - - - -	18	8	26	19	71	—	71	—	34	—
PRESTON AND WYRE - - - - -	7	1	68	45	121	—	121	—	63	6
PRESTON AND LONGRIDGE - - -	1	1	11	2	15	—	15	—	12	—
LANCASHIRE AND YORKSHIRE AND LANCASHIRE UNION.	—	1	22	9	32	—	32	—	23	—
Total - - - - -	26	11	127	75	239	—	239	—	132	6
LISKEARD AND CARADON -										
	—	1	1	—	1	1	1	1	1	1
LONDON AND NORTH-WESTERN:										
Main Line - - - - -	344	178	1,192	467	2,171	10	2,171	10	1,366	4
Branches - - - - -	251	141	1,237	349	1,929	49	1,929	49	1,356	22
Joint Lines, &c. - - - - -	25	10	92	31	158	—	158	—	102	—
Total - - - - -	620	329	2,521	847	4,258	59	4,258	59	2,824	26
LONDON AND NORTH-WESTERN AND GREAT WESTERN JOINT:										
Main Lines - - - - -	66	13	175	101	352	3	352	3	180	8
Branches - - - - -	14	1	44	8	66	1	66	1	45	—
VALE OF TOWY - - - - -	6	—	15	2	23	—	23	—	15	—
Total - - - - -	86	14	234	111	441	4	441	4	240	8
LONDON AND SOUTH-WESTERN -										
	249	20	848	473	1,585	5	1,585	5	844	24
LONDON, BRIGHTON, AND SOUTH COAST.										
	104	—	603	285	992	—	992	—	573	30
LONDON, CHATHAM, AND DOVER.										
	51	2	239	170	461	1*	462	—	236	5†
LONDONDERRY - - - - -										
	1	1	6	4	3	9	1	11	3	4
LONDON, TILBURY, & SOUTHEAD:										
Main Line - - - - -	11	—	67	45	114	9	115	8	54	13
Branches - - - - -	6	—	7	1	7	7	7	7	1	6
Total - - - - -	17	—	74	46	121	16	122	15	55	19

* The points of this cross-over road are fastened by padlocks, the keys of which are kept in the signal-box.

† Sidings where safety points cannot be fixed; each is provided with a scotch interlocked and worked from signal-box.

NAME OF RAILWAY.	Number of Cases in which any Passenger Line is connected with or crossed on the Level by				Number of Cases in which the usual Requirements of the Inspecting Officers of the Board of Trade have or have not been complied with in the following respects:					
	Any other Passenger Line.	Any Goods Line.	Any Siding.	Any Cross-over Road.	Concentration of Signal and Point Levers.		Interlocking of Signal and Point Levers.		Addition of Safety Points in case of Goods Lines and Sidings.	
					Have.	Havenot.	Have.	Havenot.	Have.	Havenot.
ENGLAND AND WALES—continued.	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>h</i>	<i>h</i>	<i>i</i>	
ACCLESFIELD COMMITTEE -	^a 1	—	8	9	18	—	18	—	8	—
ANCHESTER AND MILFORD -	—	2	12	1	2	13	2	13	2	12
ANCHESTER, SHEFFIELD, AND LINCOLNSHIRE:										
Main Line - - - -	35	36	307	168	543	3	543	3	334	9
Branches - - - -	22	18	189	113	300	42	299	43	201	6
Total - - - -	57	54	496	281	843	45	842	46	535	15
ANCHESTER, SOUTH JUNCTION, AND ALTRINCHAM.	13	1	34	23	70	1	70	1	35	—
ARYPORT AND CARLISLE:										
Main Line - - - -	3	6	44	21	74	—	74	—	50	—
Branches - - - -	7	2	26	—	22	13	22	13	26	2
Total - - - -	10	8	70	21	96	13	96	13	76	2
ERSEY :										
Main Line - - - -	3	—	5	8	16	—	16	—	5	—
Branch - - - -	2	—	3	2	7	—	7	—	3	—
Total - - - -	5	—	8	10	23	—	23	—	8	—
ETROPOLITAN:										
Main Line - - - -	12	3	24	21	60	—	60	—	27	—
Branches - - - -	10	1	37	42	90	—	90	—	38	—
Total - - - -	22	4	61	63	150	—	150	—	65	—
ETROPOLITAN DISTRICT	45	2	45	51	143	—	143	—	27	20
IDLAND:										
Main Lines - - - -	170	135	995	224	1,523	1	1,523	1	1,111	19
Branch Lines - - - -	172	40	975	129	1,183	133	1,184	132	950	65
Lines worked - - - -	13	—	47	8	47	21	47	21	36	11
Joint Lines - - - -	44	2	150	27	202	21	202	21	143	9
Total - - - -	399	177	2,167	388	2,955	176	2,956	175	2,240	104
IDLAND AND SOUTH-WESTERN JUNCTION.	6	—	22	13	41	—	41	—	22	—
EATH AND BRECON - -	12	8	40	—	36	24	36	24	37	11
ORTHAMPTON AND BANBURY -	8	1	13	—	20	2	20	2	12	2
ORTH AND SOUTH-WESTERN JUNCTION.	8	1	16	14	30	9*	33	6†	15	2
ORTH-EASTERN - - - -	387	259	1,901	788	3,325	10	3,325	10	2,143	17
ORTH LONDON - - - -	16	13	39	67	128	7‡	135	—	52	—
ORTH STAFFORDSHIRE:										
Main Line - - - -	20	14	83	46	163	—	163	—	96	1§
Branches - - - -	21	17	194	102	325	9	334	—	210	1¶
Total - - - -	41	31	277	148	488	9	497	—	306	2

* Three pairs of points are fork-locked and controlled from the nearest signal station.

† Two pairs padlocked.

‡ In 6 of these cases fork-locks are provided, worked from the nearest signal station. In the 7th case the points are locked by Annett's key.

§ This is a crossing at right angles, and has blocks worked from the box and interlocked.

|| These are point levers which are locked from the frame by means of rods and bolt locks, the actual levers being at the points.

¶ A crossing at right angles, protected by interlocked blocks.

NAME OF RAILWAY.	Number of Cases in which any Passenger Line is connected with or crossed on the Level by				Number of Cases in which the usual Requirements of the Inspecting Officers of the Board of Trade have or have not been complied with in the following respects:					
	Any other Passenger Line.	Any Goods Line.	Any Siding.	Any Cross-over Road.	Concentration of Signal and Point Levers.		Interlocking of Signal and Point Levers.		Addition of Safety Points in case of Goods Lines and Sidings.	
					Have.	Have not.	Have.	Have not.	Have.	Have not.
ENGLAND AND WALES—continued.										
NORTH WALES (NARROW GAUGE):	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>h</i>	<i>k</i>	<i>l</i>
Main Line - - - -	—	—	9	1	10	—	10	—	9	—
Branch - - - -	—	—	5	—	5	—	5	—	5	—
Total - - - -	—	—	14	1	15	—	15	—	14	—
OLDHAM, ASHTON, AND GUIDE BRIDGE JUNCTION.	3	1	19	15	38	—	38	—	20	—
PEMBROKE AND TENBY - -	19	2	19	3	—	43	—	43	8	13
PONTYPRIDD, CAERPHILLY, AND NEWPORT.	2	—	4	1	7	—	7	—	4	—
RAVENGLASS AND ESKDALE -	—	—	8	—	—	8	—	8	—	8
RHONDDA AND SWANSEA BAY -	7	2	7	—	16	—	16	—	9	—
RHYMNEY:										
Main Line - - - -	17	6	47	16	81	5	81	5	53	—
Branches - - - -	11	5	44	30	81	9	81	9	48	1
Total - - - -	28	11	91	46	162	14	162	14	101	1
SEACOMBE, HOYLAKE, AND DEE-SIDE.	15	2	21	5	42	1	42	1	23	—
SEVERN AND WYE AND SEVERN BRIDGE.	16	11	38	8	73	—	73	—	46	3
SHEFFIELD AND MIDLAND -	2	—	25	16	43	—	43	—	25	—
SOUTH-EASTERN:										
Main Line - - - -	23	1	121	141	279	7	280	6	84	38
Branches - - - -	33	2	393	209	373	265	375	263	268	127
Total - - - -	57	3	520	353	672	261	661	272	356	167
SOUTH-WESTERN AND MIDLAND RAILWAY COMPANIES (SOMERSET AND DORSET JOINT LINE).	60	2	55	25	142	—	142	—	57	—
SOUTHWOLD - - - -	—	—	9	—	—	9	9	—	9	—
TAFF VALE:										
Main Line - - - -	9	20	34	40	103	—	103	—	54	—
Branch - - - -	12	17	136	81	245	1	245	1	152	1
Total - - - -	21	37	170	121	348	1	348	1	206	1
TALYLLYN - - - -	2	—	1	—	—	3	—	3	1	—
WEST LANCASHIRE - -	6	2	26	28	62	—	62	—	28	—
WEST LONDON EXTENSION -	5	1	6	6	18	—	18	—	7	—
WEST SOMERSET MINERAL -	—	—	6	—	—	6	—	6	—	6
WREXHAM, MOLD, AND CONNAH'S QUAY.	5	2	8	2	17	—	17	—	10	—

NAME OF RAILWAY.	Number of Cases in which any Passenger Line is connected with or crossed on the Level by				Number of Cases in which the usual Requirements of the Inspecting Officers of the Board of Trade have or have not been complied with in the following respects:					
	Any other Passenger Line.	Any Goods Line.	Any Siding.	Any Cross-over Road.	Concentration of Signal and Point Levers.		Interlocking of Signal and Point Levers.		Addition of Safety Points in case of Goods Lines and Sidings.	
					Have.	Havenot.	Have.	Havenot.	Have.	Havenot.
SCOTLAND.	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>h</i>	<i>k</i>	<i>l</i>
AYRSHIRE AND WIGTOWNSHIRE	12	—	13	—	25	—	25	—	11	2
CALEDONIAN :										
Main Line - - - -	31	12	188	85	316	—	316	—	194	6
Branches - - - -	175	55	880	361	1,359	112	1,359	112	923	12
Total - - - -	206	67	1,068	446	1,675	112	1,675	112	1,117	18
CITY OF GLASGOW UNION -	8	6	15	20	48	1	48	1	20	1
DUNDEE AND ARBROATH JOINT -	4	3	36	23	62	4	62	4	37	2
GLASGOW AND KILMARNOCK JOINT :										
Main Line - - - -	7	4	28	22	61	—	61	—	32	—
Branch - - - -	4	—	9	2	15	—	15	—	9	—
Total - - - -	11	4	37	24	76	—	76	—	41	—
GLASGOW AND PAISLEY JOINT :										
Main Line - - - -	8	9	23	35	75	—	75	—	32	—
Branch - - - -	1	1	4	3	9	—	9	—	5	—
Total - - - -	9	10	27	38	84	—	84	—	37	—
GLASGOW AND SOUTH-WESTERN	129	22	393	175	681	38	681	38	382	33
GREAT NORTH OF SCOTLAND :										
Main Line - - - -	55	5	85	24	122	47	122	47	62	28
Branches - - - -	45	—	118	4	50	117	50	117	24	94
Total - - - -	100	5	203	28	172	164	172	164	86	122
GREENOCK AND WEMYSS BAY -	1	—	14	4	16	3	10	9	13	1
HIGHLAND :										
Main Line - - - -	113	7	123	14	138	119	136	121	59	71
Branches - - - -	21	—	43	—	36	28	33	31	17	26
Total - - - -	134	7	166	14	174	147	169	152	76	97
NORTH BRITISH :										
Main Line - - - -	113	58	644	229	857	187	855	189	601	101
Branches - - - -	47	57	604	118	608	218	607	219	588	73
Total - - - -	160	115	1,248	347	1,465	405	1,462	408	1,189	174
NORTHPATRICK AND WIGTOWN-SHIRE :										
Main Line - - - -	18	4	22	—	16	28	16	28	11	15
Branches - - - -	11	—	24	4	39	—	39	—	24	—
Total - - - -	29	4	46	4	55	28	55	28	35	15

NAME OF RAILWAY.	Number of Cases in which any Passenger Line is connected with or crossed on the Level by				Number of Cases in which the usual Requirements of the Inspecting Officers of the Board of Trade have or have not been complied with in the following respects					
	Any other Passenger Line.	Any Goods Line.	Any Siding.	Any Cross-over Road.	Concentration of Signal and Point Levers.		Interlocking of Signal and Point Levers.		Addition of Safe Points in case of Goods Lines and Sidings.	
					Have.	Havenot.	Have.	Havenot.	Have.	Havenot.
	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>h</i>	<i>k</i>	<i>l</i>
IRELAND.										
BALLYCASTLE - - -		—	7	1	8	—	8	—	3	4
BELFAST AND COUNTY DOWN:										
Main Line - - - -	24	5	17	14	38	22	52	3	14	8
Branches - - - -	15	2	14	1	24	8	30	2	10	6
Total - - - -	39	7	31	15	62	30	82	10	24	14
BELFAST AND NORTHERN COUNTIES:										
Main Line - - - -	22	3	68	19	88	24	102	10	54	17
Branches - - - -	15	6	90	5	90	26	109	7	77	19
Total - - - -	37	9	158	24	178	50	211	17	131	36
CAVAN, LEITRIM AND ROSCOMMON LIGHT.	10	—	19	1	30	—	30	—	19	—
CORK, BANDON, AND SOUTH COAST:										
Main Line - - - -	17	—	27	—	18	26	15	29	4	23
Branches - - - -	15	—	16	1	20	12	20	12	5	11
Total - - - -	32	—	43	1	38	38	35	41	9	34
CORK AND MACROOM DIRECT -	—	—	1	—	1	—	1	—	1	—
CORK, BLACKROCK, AND PASSAGE	1	1	5	—	4	3	3	4	—	6
DUBLIN, WICKLOW, AND WEXFORD:										
Main Line - - - -	44	27	29	5	87	40	85	42	38	35
Branches - - - -	4	14	3	1						
Total - - - -	48	41	32	6						
FINN VALLEY - - - -	—	—	2	—	2	—	2	—	2	—
GREAT NORTHERN (IRELAND):										
Main Line - - - -	33	13	214	68	72	256	83	245	46	181
Branches - - - -	27	1	103	10	42	99	40	101	16	88
Total - - - -	60	14	317	78	114	355	123	346	62	269
GREAT SOUTHERN AND WESTERN:										
Main Line - - - -	17	5	115	66	126	77	126	77	85	35
Branches - - - -	66	12	147	17	147	95	146	96	97	62
Total - - - -	83	17	262	83	273	172	272	173	182	97
LONDON AND NORTH-WESTERN:										
DUNDALK, NEWRY, AND GREENORE	1	—	11	—	12	—	12	—	11	—
NORTH WALL EXTENSION - - -	1	3	6	2	12	—	12	—	9	—
Total - - - -	2	3	17	2	24	—	24	—	20	—

NAME OF RAILWAY.	Number of Cases in which any Passenger Line is connected with or crossed on the Level by				Number of Cases in which the usual Requirements of the Inspecting Officers of the Board of Trade have or have not been complied with in the following respects:					
	Any other Passenger Line.	Any Goods Line.	Any Siding.	Any Cross-over Road.	Concentration of Signal and Point Levers.		Interlocking of Signal and Point Levers.		Addition of Safety Points in case of Goods Lines and Sidings.	
					Have.	Have not.	Have.	Have not.	Have.	Have not.
IRELAND—continued.	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>h</i>	<i>k</i>	<i>l</i>
LONDONDERRY AND LOUGH SWILLY:										
Main Line - - - -	1	1	7	—	3	6*	3	6	8	—
Branch - - - -	—	—	9	1	3	7*	3	7	4	5
Total - - - -	1	1	16	1	6	13*	6	13	12	5
MIDLAND GREAT WESTERN:										
Main Line - - - -	44	1	165	43	220	33	220	33	154	12
Branches - - - -	20	—	75	9	69	35	69	35	59	16
Total - - - -	64	1	240	52	289	68	289	68	213	28
SLIGO, LEITRIM, AND NORTHERN COUNTIES.	—	3	11	4	18	—	18	—	14	—
WATERFORD AND CENTRAL IRELAND.	6	—	31	1	8	30	8	30	6	25
WATERFORD AND LIMERICK:										
Main Line - - - -	27	2	43	13	32	53	32	53	25	20
Branches - - - -	21	—	75	4	44	56	41	59	36	39
Total - - - -	48	2	118	17	76	109	73	112	61	59
WATERFORD AND TRAMORE	—	—	2	—	—	2	—	2	—	2
WATERFORD, DUNGARVAN, AND LISMORE.	9	—	18	1	27	1	27	1	16	2
WEST CLARE - - - -	—	1	13	—	8	6	8	6	6	8
WEST DONEGAL - - - -	—	—	4	1	5	—	5	—	4	—

* In seven cases patent safety locks are fixed, three others are at present locked with hand padlocks.

SUMMARY.

	Number of Cases in which any Passenger Line is connected with or crossed on the Level by				Number of Cases in which the usual Requirements of the Inspecting Officers of the Board of Trade have or have not been complied with in the following respects:—					
	Any other Passenger Line.	Any Goods Line.	Any Siding.	Any Cross-over Road.	Concentration of Signal and Point Levers.		Interlocking of Signal and Point Levers.		Addition of Safety Points in case of Goods Lines and Sidings.	
					Have.	Have not.	Have.	Have not.	Have.	Have not.
ENGLAND AND WALES -	4,478	1,522	18,547	7,240	29,817	1,970	30,016	1,771	18,833	1,236
SCOTLAND - - - -	803	243	3,266	1,123	4,433	902	4,519	916	3,044	465
IRELAND - - - -	440	100	1,347	288	1,258	917	1,310	865	823	624
TOTAL UNITED KINGDOM -	5,721	1,865	23,160	8,651	35,508	3,789	35,845	3,552	22,700	2,325

COMPARATIVE STATEMENT showing the Number of Cases upon the RAILWAYS in the UNITED KINGDOM in which the SIGNAL and POINT LEVERS had or had not been Interlocked, and the Proportion per Cent. Interlocked for the Years 1888 and 1889 respectively.

NAME OF COMPANY.	1888.		1889.		Per-centage Interlocked.		Per-centage Increase in 1889 over 1888.
	Interlocked.	Not Interlocked.	Interlocked.	Not Interlocked.	1888.	1889.	
ENGLAND AND WALES.							
AYLESBURY AND BUCKINGHAM	—	7	—	7	Per cent. Nil.	Per cent. Nil.	Per cent. —
BRECON AND MERTHYR TYDFIL JUNCTION	122	53	122	46	70	73	3
CAMBRIAN	146	162	147	181	47	45	—
CENTRAL WALES AND CARMARTHEN JUNCTION	8	14	11	11	36	36	—
CHARNOOD FOREST	10	—	10	—	} Cent.	Cent.	—
CHESHIRE LINES	312	—	315	—			
CLEATOR AND WORKINGTON	67	—	67	1	—	99	—
COCKERMOUTH, KESWICK, AND PENRITH	35	—	35	—	Cent.	Cent.	—
COLNE VALLEY AND HALSTEAD	2	19	5	9	9	36	27
CORRIS	11	—	11	—	} Cent.	Cent.	—
EAST AND WEST JUNCTION	51	—	51	—			
EASTERN AND MIDLANDS	104	3	104	3	97	97	—
FESTINIOG	9	25	21	10	26	68	42
FURNESS	237	47	237	43	83	85	2
GREAT EASTERN	1,992	260	2,176	209	89	91	2
*GREAT NORTHERN	1,512	127	1,557	115	92	93	1
GREAT NORTHERN AND GREAT EASTERN JOINT	200	2	202	2	99	99	—
GREAT NORTHERN AND LONDON AND NORTH-WESTERN JOINT LINES.	61	—	59	—	Cent.	Cent.	—
GREAT WESTERN	4,183	398	4,343	381	91	92	1
HAMMERSMITH AND CITY	14	2	16	2	87·5	89	1·5
HULL, BARNSELY, AND WEST RIDING JUNCTION RAILWAY AND DOCK.	113	—	113	—	Cent.	Cent.	—
ISLE OF WIGHT	25	8	25	8	76	76	—
ISLE OF WIGHT (CENTRAL)	14	9	22	5	39	81·5	42·5
LANCASHIRE AND YORKSHIRE	2,142	5	2,226	5	} Cent.	Cent.	—
†LANCASHIRE AND YORKSHIRE AND LONDON AND NORTH-WESTERN JOINT LINES.	227	—	239	—			
LONDON AND NORTH-WESTERN	4,176	125	4,258	59	97	99	2
LONDON AND NORTH-WESTERN AND GREAT WESTERN JOINT.	408	4	441	4	99	99	—
LONDON AND SOUTH-WESTERN	1,588	8	1,585	5	99·5	100	0·5
LONDON, BRIGHTON, AND SOUTH COAST	976	—	992	—	} Cent.	Cent.	—
LONDON, CHATHAM, AND DOVER	462	—	462	—			
LONDONDERY	1	11	1	11	8½	8½	—
LONDON, TILBURY, AND SOUTHBEND	120	16	122	15	88	89	1
MACLESFIELD COMMITTEE	18	—	18	—	Cent.	Cent.	—
MANCHESTER AND MILFORD	2	13	2	13	13	13	—
MANCHESTER, SHEFFIELD, AND LINCOLNSHIRE	830	51	842	46	94	95	1
MANCHESTER, SOUTH JUNCTION, AND ALTRINGHAM.	70	1	70	1	99	99	—
MARYPORT AND CARLISLE	96	13	96	13	88	88	—
MERSEY	23	—	23	—	} Cent.	Cent.	—
‡METROPOLITAN	138	—	150	—			
METROPOLITAN DISTRICT	139	—	143	—	} Cent.	Cent.	—
MIDLAND	2,890	207	2,956	175			
MIDLAND AND SOUTH-WESTERN JUNCTION	41	—	41	—	Cent.	Cent.	—
NEATH AND BRECON (NEATH BRANCH)	12	14	36	24	46	60	14
NORTHAMPTON AND BANBURY JUNCTION	19	2	20	2	90	91	1
NORTH AND SOUTH-WESTERN JUNCTION	38	6	33	6	85	85	—
NORTH-EASTERN	3,304	10	3,325	10	100	100	—
NORTH LONDON	135	—	135	—	} Cent.	Cent.	—
NORTH STAFFORDSHIRE	497	—	497	—			
NORTH WALES (NARROW GAUGE)	15	—	15	—	} Cent.	Cent.	—
OLDHAM, ASHTON-UNDER-LYNE, AND GUIDE BRIDGE JUNCTION.	38	—	38	—			
PEMBROKE AND TENBY	—	43	—	43	Nil.	Nil.	—
PONTYPRIDD, CAERPHILLY, AND NEWPORT	—	—	7	—	—	100	—
RAVENGLASS AND ESKDALE	—	8	—	8	Nil.	Nil.	—
RHONDDA AND SWANSEA BAY	16	—	16	—	Cent.	Cent.	—

* Including the Methley and the West Riding and Grimsby Joint Railways.

† Including the North Union, Preston and Wyre, Preston and Longridge, and the Lancashire, and Yorkshire and Lancashire Union Joint Lines.

‡ Including the Metropolitan and Metropolitan District Joint Line.

COMPARATIVE STATEMENT—*continued.*

NAME OF COMPANY.	1888.		1889.		Per-centage Interlocked.		Per-centage Increase in 1889 over 1888.
	Interlocked.	Not Interlocked.	Interlocked.	Not Interlocked.	1888.	1889.	
ENGLAND AND WALES—continued.							
RHYMNEY - - - - -	160	14	162	14	Per cent.	Per cent.	Per cent.
SEACOMBE, HOYLAKE, AND DEESIDE - -	36	8	42	1	92	92	—
SEVERN AND WYE AND SEVERN BRIDGE - -	72	—	73	—	82	98	16
SHEFFIELD AND MIDLAND - - - - -	43	—	43	—	Cent.	Cent.	—
SOUTH-EASTERN - - - - -	665	269	661	272	71	70	—
SOUTH-WESTERN AND MIDLAND - - - - -	142	—	142	—	Cent.	Cent.	—
SOUTHWOLD - - - - -	9	—	9	—			
TAFF VALE - - - - -	324	1	348	1			
WEST LANCASHIRE - - - - -	45	—	62	—			
WEST LONDON EXTENSION - - - - -	18	—	18	—	Nil.	Nil.	—
WEST SOMERSET MINERAL - - - - -	—	6	—	6			
WREXHAM, MOLD, AND CONNAH'S QUAY -	11	—	17	—	Cent.	Cent.	—
TOTAL, ENGLAND AND WALES - - - - -	29,224	2,034	30,016	1,771	93·5	94	·5
SCOTLAND.							
CALEDONIAN - - - - -	1,624	110	1,675	112	94	94	—
CITY OF GLASGOW UNION - - - - -	47	1	48	1	98	98	—
DUNDEE AND ARBROATH JOINT - - - - -	61	4	62	4	94	94	—
GLASGOW AND KILMARNOCK JOINT LINE -	76	—	76	—	Cent.	Cent.	—
GLASGOW AND PAISLEY JOINT LINE - - -	84	—	84	—			
GLASGOW AND SOUTH-WESTERN - - - - -	675	42	681	38	94	95	1
GREAT NORTH OF SCOTLAND - - - - -	172	164	172	164	51	51	—
GREENOCK AND WEMYSS BAY - - - - -	10	6	10	9	62·5	53	—
HIGHLAND - - - - -	169	152	169	152	53	53	—
NORTH BRITISH - - - - -	1,429	445	1,462	408	76	78	2
PORTPATRICK AND WIGTOWNSHIRE - - -	55	28	55	28	66	66	—
TOTAL, SCOTLAND - - - - -	4,402	952	4,519	916	82	83	1
IRELAND.							
BALLYCASTLE - - - - -	8	—	8	—	Cent.	Cent.	—
BELFAST AND COUNTY DOWN - - - - -	80	10	82	10	89	89	—
BELFAST AND NORTHERN COUNTIES - - -	181	15	211	17	92	92	—
CAVAN LEITRIM AND ROSCOMMON LIGHT -	30	—	30	—	—	Cent.	—
CORK, BANDON, AND SOUTH COAST - - -	47	29	35	41	61	46	—
CORK AND MACROOM DIRECT - - - - -	1	—	1	—	Cent.	Cent.	—
CORK, BLACKROCK, AND PASSAGE - - -	3	4	3	4	43	43	—
DUBLIN, WICKLOW, AND WEXFORD - - -	84	42	85	42	67	67	—
FINN VALLEY - - - - -	2	—	2	—	Cent.	Cent.	—
GREAT NORTHERN (IRELAND) - - - - -	120	346	123	346	26	26	—
GREAT SOUTHERN AND WESTERN - - - -	257	182	272	173	58·5	61	2·5
LONDON AND NORTH-WESTERN - - - - -	24	—	24	—	Cent.	Cent.	—
LONDONDERRY AND LOUGH SWILLY - - -	6	13	6	13	31	31	—
MIDLAND GREAT WESTERN - - - - -	266	81	289	68	77	81	4
SLIGO, LEITRIM, AND NORTHERN COUNTIES -	18	—	18	—	Cent.	Cent.	—
WATERFORD AND CENTRAL IRELAND - - -	8	30	8	30	21	21	—
WATERFORD AND LIMERICK - - - - -	73	112	73	112	39	39	—
WATERFORD AND TRAMORE - - - - -	—	2	—	2	Nil.	Nil.	—
WATERFORD, DUNGARVAN, AND LISMORE -	27	1	27	1	96	96	—
WEST CLARE - - - - -	8	6	8	6	57	57	—
WEST DONEGAL - - - - -	5	—	5	—	Cent.	Cent.	—
TOTAL, IRELAND - - - - -	1,278	875	1,310	865	59	60	1
TOTAL, UNITED KINGDOM - - - - -	34,904	3,861	35,845	3,552	90	91	1

RETURN, in compliance with the RAILWAY REGULATION ACT, 1873, showing the Systems
were Worked on the

RAILWAY COMPANY.	Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, OR (Where the System is not continuous, enter separately one under the other, under)										
			WORKED BY TELEGRAPH - - - - -										
			On the Absolute Block System.						On the Permissive Block System.				
			From	To	Distance of Double Line.	Distance of Single Line.			From	To	Distance of Double Line.		
Worked by the Train Staff System in addition.	Worked without the Train Staff System.	Worked on Electrical Train Staff or Tablet System.											
ENGLAND AND WALES.													
AYLESBURY AND BUCKINGHAM.	m. ch.	m. ch.	-	-	-	-	m. ch.	m. ch.	m. ch.	m. ch.	-	-	m. ch.
BISHOP'S CASTLE -	-	9 57	-	-	-	-	-	-	-	-	-	-	-
BRECON AND MERTHYR.	11 32	47 39	Brecon -	Talylyn -	0 55	3 23	-	-	-	-	-	-	-
			Talylyn -	Deri Junction -	1 33	-	20 46						
			Ponsticill -	Rhydyar Junction.	-	6 22							
			Bargoed South Junction.	Maescwmmmer -	3 33								
			Rhymney -	Whiterose -	-	-	2 35						
			Whiterose -	Elliot Pit Junction	0 63								
			Elliot Pit Junction	Aberbargoed Junction.	-	-	2 45						
			Maescwmmmer -	Machen -	-	-	7 31						
			Machen -	Bassaleg Junction	5 8								
			Machen -	Caerphilly Junction.	-	3 41							
	11 32	47 39			11 32	13 6	32 77	-					
BRISTOL PORT RAILWAY AND PIER.	-	5 61	Sneyd Park -	Avonmouth -	-	3 0	-	-	-	-	-	-	-
CAMBRIAN - - -	8 56	216 72	Whitchurch Junction.	Oswestry -	-	18 12	-	-	-	-	-	-	-
			Oswestry -	Llanymynech -	5 76								
			Llanymynech -	Buttington Junction.	-	7 2							
			Buttington Junction.	Welshpool -	2 60								
			Welshpool -	Newtown -	-	13 58							
			Newtown -	Moat Lane Junction.	-	-	-	4 41					
			Moat Lane Junction.	Talylyn Junction	-	55 76							
			Moat Lane Junction.	Machynlleth -	-	22 60							
			Machynlleth -	Glandovey Junction.	-	-	-	3 68					
			Glandovey Junction.	Aberystwith -	-	16 59							
			Glandovey Junction.	Pwllheli -	-	53 28							
			Barmouth Junction.	Penmaenpool -	-	5 50							
					8 56	193 34	-	8 29					
CENTRAL WALES AND CARMARTHEN JUNCTION.	-	13 25	CarmarthenValley Junction.	Abergwilly Junction.	-	-	13 25	-	-	-	-	-	-
CHARNWOOD FOREST.	-	10 0	Charnwood Forest Junction.	Loughboro' -	-	10 0	-	-	-	-	-	-	-

under which the various Portions of the Line under the Control of the several Companies
31st December 1889.

OF OTHER RAILWAYS WORKED BY THEM.													REMARKS.
the Head applicable, each Main Line or Portion of Main Line or Branch Line so worked.)													
WORKED BY TELEGRAPH.					Single Lines of Railway (not included in the foregoing Columns), (1.) Worked under the System in which only One Engine in Steam or Two or more Engines coupled together are allowed to be upon the Single Line or portions thereof at one and the same time; or (2.) Worked under the Train Porter System; or (3.) Worked under the Train Staff System.								
Not on either of the foregoing Systems.					Distance of								
From	To	Dis- tance of Double Line.	Distance of Single Line.		From	To	Distance of						
			Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.			System as above. (1.)	Train Porter System. (2.)	Train Staff System. (3.)				
									With Tickets.	With- out Ticket.			
-	-	-	-	-	Aylesbury	Buckingham	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.		
-	-	-	-	-	Bishop's Castle	Stretford Bridge Junction.	9 57	-	-	-	-		
-	-	-	-	-	Pant Junction	Dowlais	-	-	1 36	-	2 51	Goods lines at Brecon, Merthyr, &c.	
									1 36	-	2 51		
-	-	-	-	-	Clifton	Sneyd Park	2 61	-	-	-	-		
-	-	-	-	-	Llyncllys	Porthywaen	-	-	-	-	*1 65	* Worked under system No. 1.	
					Llanymynech	Llanfyllin	-	-	9 13	-			
					Llanymynech	Nantmawr	-	-	-	-	*3 75		
					Abermule	Kerry	3 55	-	-	-			
					Penmaenpool	Dolgelly	-	-	1 66	-			
					Junction line to join Great Western Railway at Oswestry.		-	0 14	-	-			
					Loop line at Barmouth		-	0 21	-	-			
					Aberdovey Junction.	Aberdovey Har- bour.	-	-	-	-	0 88†	† Worked under system No. 2.	
							3 55	0 35	10 79	-	6 18		
-	-	-	-	-	-	-	-	-	-	-	-		
-	-	-	-	-	-	-	-	-	-	-	-		

RAILWAY COMPANY.	Total Length of the Company's Railway open for Passenger Traffic and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, OR (Where the System is not continuous, enter separately one under the other, under									
			WORKED BY TELEGRAPH - - - - -									
			On the Absolute Block System.						On the Permissive Block System.			
			From	To	Distance of Double Line.	Distance of Single Line.			From	To	Distance of Double Line.	
Worked by the Train Staff System in addition.	Worked without the Train Staff System.	Worked on Electrical Train Staff or Tablet System.										
ENGLAND AND WALES—continued.												
CHESHIRE LINES -	m. ch. 116 1	m. ch. 3 70	Liverpool Central Station.	Machester Central Station.	m. ch. 34 4	m. ch. —	m. ch. —	m. ch. —	-	-	-	m. ch. —
			Warrington Straight Line	-	2 17							
			Glazebrook East Junction.	Woodley Junction	15 62							
			Apethorne Junction.	Godley Junction	2 16							
			Skelton Junction	Broadheath Junction.	0 39							
			Skelton Junction	Deansgate Junction.	0 32							
			Bowdon Junction	Chester	30 72							
			Halewood East Junction and Hunts Cross West Junction.	Huskinson and Aintree, Liverpool.	15 49							
			Southport Junction, Aintree.	Southport	14 3							
			Cornbrook Loops	-	0 27							
CLEATOR AND WORKINGTON JUNCTION.	11 15	12 73	Cleator Moor Junction.	Siddick Junction	11 15	—	—	—	-	-	-	-
				Calva Junction	Linefoot Junction	—	—	—	6 30			
				Distington Junction.	Rowrah Junction	—	6 43					
						11 15	6 43	—	6 30			
COCKERMOUTH, KESWICK, AND PENRITH.	—	31 14	Cockermouth Junction.	Penrith	—	18 12 ^a	—	13 2	-	-	-	—
COLNE VALLEY AND HALSTEAD.	—	19 0	-	-	-	-	-	-	-	-	-	-
CORRIS	—	6 40	-	-	-	-	-	-	-	-	-	-
DOVER AND DEAL	8 28	—	Buckland Junction	Deal Junction	8 28	—	—	—	-	-	-	-
EAST AND WEST JUNCTION.	—	40 68	Greens Norton	Broom	—	40 68	—	—	-	-	-	-
EASTERN AND MIDLANDS.	6 44	102 69	Lynn, South	Grimston Road	6 44	—	—	—	-	-	-	-
			Melton Constable	Aylsham	—	11 19						
			Great Ormesby	Yarmouth	—	5 40						
			Aylsham	Great Ormesby	—	—		24 40				
			Grimston Road	Norwich	—	—	—	46 35				
			Melton Constable	Cromer	—	—	—	15 15				
					6 44	16 59	—	86 10				
FESTINIOG	—	13 20	Boston Lodge Box	Minfordd	—	1 2	—	—	-	-	-	-
			Ddauilt	North End Tunnel Box.	—	0 76						
			Tanygrisiau	Dinas Junction	—	0 74						
			Dinas Junction	Festiniog and Blaenau Junction.	—	0 36						
			Festiniog and Blaenau Junction.	Puffws	—	0 12						
					—	3 40	—	—				

OF OTHER RAILWAYS WORKED BY THEM.

the Head applicable, each Main Line or Portion of Main Line or Branch Line so worked.)

WORKED BY TELEGRAPH.					Single Lines of Railway (not included in the foregoing Columns), (1.) Worked under the System in which only One Engine in Steam or Two or more Engines coupled together are allowed to be upon the Single Line or portions thereof at one and the same time; or (2.) Worked under the Train Porter System; or (3.) Worked under the Train Staff System.					Length of the Portions of Company's Railway and of other Railways worked by them for Goods and Mineral Traffic only.	REMARKS.		
Not on either of the foregoing Systems.					From	To	Distance of						
From	To	Dis- tance of Double Line.	Distance of Single Line.				System as above. (1.)	Train Porter System. (2.)	Train Staff System. (3.)				
			Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.					With Tickets.			With- out Ticket.	
-	-	-	-	-	Allerton Branch -	-	-	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	* Worked under system No. 1.
					Cressington Junction.	Garston Old Station.		-	-	-	-	\$0 29	† Double line worked on the permissive block system.
					Halewood West Junction.	Hunt's Cross East Junction.		-	-	-	-	† 0 02	
					Falks Branch, Winsford	-		-	-	-	-	† 0 28	‡ Worked under system No. 3.
					George's Road Junction, Stockport.	Heaton Mersey West Junction.		-	-	-	-	† 1 3	§ Double line worked on absolute block system.
					Northwich Salt Branches	-		-	-	-	-	* 3 66	Worked by absolute block system and train staff combined.
					Winnington Branch	-		-	-	-	-	* 1 63	
					Winsford Junction	Whitegate		-	-	-	-	2 76	
					Whitegate	Winsford		-	-	-	-	† 3 15	
												14 69	
					Cloflock's Junction	Workington Bridge Junction.		-	-	-	-	* 0 30	* Double line worked by telegraph but not on absolute block system.
					Harrington Junction.	Harrington Ironworks.		-	-	-	-	† 1 35	† Worked by private engine and telephone.
					Harrington Junction.	Moss Bay Ironworks.		-	-	-	-	† 1 10	‡ Worked under system No. 3.
					Harrington Junction.	Moss Bay Ironworks.		-	-	-	-	\$1 13	§ Worked under system No. 1.
					Dock Junction	Lonsdale Dock		-	-	-	-	\$1 11	
												5 19	
													* Trains from Threlkeld to Troutbeck, a distance of 4 m. 59 ch., are permitted to leave with a "Caution Ticket" prior to the "All Clear" signal being received from Troutbeck.
					Chappel	Haverhill		-	-	19 0	-	-	† Corris to Aberllefenny, 1 m. 40 ch., worked also under train staff system without tickets.
					Machynlleth	Aberllefenny		6 40†	-	-	-	1 40	
												1 15	
					Portmadoc	Boston Lodge Box		-	-	1 8	-	-	
					Minfordd	Tanybwllch		-	-	5 44			
					Tanybwllch	Iddauit		-	-	2 9			
					North End Tunnel Box,	Tanygrisiau		-	-	0 79			
												9 60	

RAILWAY COMPANY.	Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, OR (Where the System is not continuous, enter separately one under the other, under									
			WORKED BY TELEGRAPH - - - - -									
			On the Absolute Block System.						On the Permissive Block System.			
			From	To	Distance of Double Line.	Distance of Single Line.			From	To	Distance of Double Line.	
	Worked by the Train Staff System in addition.	Worked without the Train Staff System.				Worked on Electrical Train Staff or Tablet System.						
ENGLAND AND WALES—continued.												
FURNESS - -	m. ch. 72 45	m. ch. 34 78	Carnforth - -	Sellafield - -	m. ch. 63 25	m. ch. —	m. ch. —	m. ch. —	-	-	-	m. ch. —
			Leven Junction -	Greenodd Junction -	0 29							
			Plumpton - -	Priory Station -	1 72							
			Millwood Loop -	- - - -	0 41							
			Millwood Junction	Thwaite Flat -	1 2							
			Salthouse Junction	Buccleuch Junction.	0 37							
			St. Luke's Junction.	Ramsden Dock -	1 48							
			Sellafield - -	Corkickle No. 2 Cabin.	—	9 54						
			Corkickle No. 1 Cabin.	Bransty - -	—	—	—	1 1				
			Foxfield - -	Coniston - -	—	10 7						
			Plumpton - -	Greenodd - -	2 40							
			Greenodd - -	Lakeside - -	—	5 60						
			Arnside - -	Hincaster - -	—	5 23						
			Salthouse - -	Piel - -	—	2 70						
			Goldmire -	Curve - -	0 32							
					72 6	33 54	—	1 1				
GARSTANG AND KNOT END.	—	7 0	-	-	-	—	—	—	—	-	-	—
GREAT EASTERN -	521 37	506 68	Liverpool Street -	Enfield - -	10 62	—	—	—	-	-	-	—
			Hackney Downs Junction.	Copper Mill Junction, near Tottenham.	1 68							
			Clapton Junction	Chingford -	6 33							
			Seven Sisters Junction.	Palace Gates -	2 48							
			Bethnal Green Junction.	Norwich, Victoria	112 78							
			Shenfield -	Wickford -	8 77							
			Wickford Junction.	Prittlewell -	—	11 54						
			Prittlewell -	Southend -	59 60							
			Wickford -	Southminster -	—	16 36						
			Belechamp Junction.	Fanton Junction -	—	14 0						
			Woodham Ferris Junction.	Maldon West Station.	—	7 16						
			Maldon West Station.	Maldon East Junction.	1 13							
			Witham West Curve	- - - -	14 89							
			Witham East Curve	- - - -	17 32							
			Witham South Junction.	Maldon East Station.	—	5 49						
			Langford Junction.	Maldon West Junction.	16 59							
			Witham -	Braintree Goods Junction.	—	5 70						
			Marks Tey -	Long Melford -	—	14 64						
			Colchester -	Wyvenhoe -	4 24							
			Wyvenhoe -	Walton-on-the-Naze.	—	14 15						
			Loop, Eastgate Junction.	St. Botolph's and Hythe Junction.	1 50							
			Thorpe (T.H.) Junction.	Clacton-on-Sea -	—	4 56						
			Manningtree Junction.	Harwich -	9 58							
			Manningtree North Curve	- - - -	0 23							
			East Suffolk Junction.	Yarmouth South Town.	52 19							
			Westerfield -	Felixstowe Pier -	0 24	13 17						
			Beccles -	Coke Ovens Junction.	—	7 52						
			Coke Ovens Junction.	Lowestoft -	0 41							

OF OTHER RAILWAYS WORKED BY THEM.

the Head applicable, each Main Line or Portion of Main Line or Branch Line so worked.)

WORKED BY TELEGRAPH.					Single Lines of Railway (not included in the foregoing Columns), (1.) Worked under the System in which only One Engine in Steam or Two or more Engines coupled together are allowed to be upon the Single Line or portions thereof at one and the same time; or (2.) Worked under the Train Porter System; or (3.) Worked under the Train Staff System.								Length of the Portions of Company's Railway and of other Railways worked by the Goods and Mineral Traffic only.	REMARKS.
Not on either of the foregoing Systems.					From	To	Distance of							
From	To	Dis- tance of Double Line.	Distance of Single Line.				System as above. (1.)	Train Porter System. (2.)	Train Staff System. (3.)					
			Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.					With Tickets.	With- out Ticket.				
m. ch.	m. ch.	m. ch.			m. ch.	m. ch.	m. ch.	m. ch.	m. ch.					
Carnforth Station, N. end.	Furness and Midland Junction.	0 39*								7 64	Branches to Mines and Works. * Worked by electric bells and gongs.			
Corkickle No. 1 Cabin.	Corkickle No. 2 Oabin.	—	—	0 23*										
		0 39	—	0 23						7 64				
		—	—	—	Garstang and Cat- terall Junction.	Pilling Station	7 0	—	—	—				
		—	—	—	Mardock	Buntingford	—	—	10 70	—				
		—	—	—	Audley End	Bartlow	—	—	7 43	—				
		—	—	—	Heacham	Wells	—	—	18 5	—				
		—	—	—	Braintree Goods Junction.	Braintree Station	—	—	0 30	0 21	Loughton Goods			
		—	—	—	Shelford	Melford	—	—	28 25	0 24	Wisbech Goods			
		—	—	—	Haverhill, Loop from G.E. to C.V. Lines.		—	—	1 0	0 26	Lynn Goods Branch.			
		—	—	—	Long Melford	East Gate (Bury)	—	—	15 44	0 15	Chingford Goods			
		—	—	—	Wyvenhoe	Brightlingsea	—	—	4 75	—	Branch.			
		—	—	—	Bentley Junction	Hadleigh	—	—	7 20	1 6	Total double lines.			
		—	—	—	Mellis	Eye	—	—	2 71	—				
		—	—	—	Wickham Market	Framlingham	—	—	5 52	—				
		—	—	—	Saxmundham Junction.	Aldeburgh	—	—	7 74	0 41	Pepper Warehouse Branch, Blackwall.			
		—	—	—	Millwall Boundary Junction.	North Greenwich	—	—	1 6	0 40	Whitechapel Coal Line.			
		—	—	—						0 22½	Braintree Goods Branch.			
		—	—	—						1 15	Ipswich Goods Branch.			
		—	—	—						0 29	Yarmouth, South Town Branch.			
		—	—	—						0 12	Cambridge Goods Line.			
		—	—	—						0 8	Cambridge Curve, Hills Road to Great North- ern Railway.			
		—	—	—						0 7	Cambridge Curve, Mill Road to Midland Railway.			
		—	—	—						1 22	Lynn Harbour Branch.			
		—	—	—						0 18½	Sudbury Goods Branch.			
		—	—	—						0 25	Hythe Goods Branch.			
		—	—	—						1 32	Snape Goods Branch.			
		—	—	—						0 31	Harwich Goods Branch.			
		—	—	—						0 17	Sutton Goods Line.			
		—	—	—						7 0	Total single lines.			

RAILWAY COMPANY.	Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, OR (Where the System is not continuous, enter separately one under the other, under)									
			WORKED BY TELEGRAPH - - - - -									
			On the Absolute Block System.						On the Permissive Block System.			
	Con- sisting of Two or more Lines of Rails.	Con- sisting of a Single Line of Rails only.	From	To	Dis- tance of Double Line.	Distance of Single Lite.			From	To	Dis- tance of Double Line.	
						Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.	Worked on Elec- trical Train Staff or Tablet System.				
ENGLAND AND WALES—continued.												
GREAT EASTERN— continued.	m. ch.	m. ch.	Tivetshall -	Beccles -	m. ch.	m. ch.	m. ch.	m. ch.				m. ch.
			Wymondham -	Forncoett -	6 16							
			Stratford (Central Junction).	Norwich, Thorpe Junction.	122 10							
			Wensum Curve, between Bridge and Whitlingham Junction.	Trowse Swing Junction.	0 25							
			Stratford (Western Junction).	Woolwich -	5 21							
			Custom House -	Beckton -	—	1 60						
			Stratford, Southern Junction.	Victoria Park -	1 31							
			Central Junction -	Channelsea Junction.	0 29							
			Stratford, Chobham Farm Junction.	Fork Junction -	0 35							
			Stratford, Southern Junction.	Stratford, Eastern Junction.	0 12							
			Channelsea Junction.	Loughton Branch Junction.	0 62							
			Stratford (Loughton Branch Junction).	Loughton -	6 78							
			Loughton -	Ongar -	—	11 17						
			Lea Bridge -	Hall Farm Junction.	0 54							
			Tottenham West Junction.	Tottenham South Junction.	0 13							
			Angel Road -	Edmonton -	—	1 25						
			Broxbourne -	Hertford -	5 50							
			St. Margarets -	Mardock -	—	2 60						
			Fenchurch Street	Blackwall -	3 41							
			Stepney -	Bow Junction -	1 59							
			Salmon's Lane Junction.	Limehouse -	0 25							
			Bishop Stortford -	Braintree -	—	17 67						
			Shelford, Shepreth Branch Junction.	Shepreth -	5 28							
			Ely, Peterboro' Branch Junction.	Peterboro' Junction.	28 9							
			March, Whitemoor Junction.	Wisbech -	7 12							
			Ely, Lynn Branch Junction.	Lynn -	25 72							
			Lynn -	Hunstanton -	0 66	14 9						
			Lynn -	Dereham -	—	26 15						
			Dereham South Curve	-	0 14							
			Wisbech -	Magdalen Road -	—	9 44						
			Denver Junction -	Stoke Ferry -	—	6 78						
			Barnwell Junction	Fordham Junction.	—	11 71						
			Fordham Junction.	Mildenhall -	—	7 19						
			Cambridge -	Newmarket -	13 70							
			Newmarket -	Warren Hill Junction.	—	1 8						
			Warren Hill Junction.	Kennett -	3 53							
			Kennett -	Haughley -	21 26							
			East Gate (Bury)	Bury -	—	0 60						
			Chesterton Junction.	St. Ives Junction	12 50							
			St. Ives Junction	Needlingworth Junction.	1 75							
			Somersham Junction.	Ramsey -	—	6 63						
			March Loop Junction.	Whitemoor Junction.	1 10							
			Ely, Sutton Branch Junction.	Needlingworth Junction.	—	14 77						
			Ely Dock Junction.	Snailwell Junction.	—	10 58						
			Snailwell Junction.	Warren Hill Junction.	0 66							
			Snailwell Junction.	Cuppenham Junction.	0 61							
			Brundall Junction	Breydon Junction	—	12 7						
			Reedham -	Breydon Junction	—	7 11						

OF OTHER RAILWAYS WORKED BY THEM.

the Head applicable, each Main Line or Portion of Main Line or Branch Line so worked.)

- WORKED BY TELEGRAPH.					Single Lines of Railway (not included in the foregoing Columns), (1.) Worked under the System in which only One Engine in Steam or Two or more Engines coupled together are allowed to be upon the Single Line or portions thereof at one and the same time; or (2.) Worked under the Train Porter System; or (3.) Worked under the Train Staff System.										REMARKS.
Not on either of the foregoing Systems.															
From	To	Dis- tance of Double Line.	Distance of Single Line.		From	To	Distance of				Length of the Portions of Company's and of other Railways worked by the Goods and Mineral Traffic only.				
			Worked by the Train Staff System in addi- tion.	Worked <i>without</i> the Train Staff System.			System as above. (1.)	Train Porter System. (2.)	Train Staff System. (3.)						
		m. ch.	m. ch.	m. ch.			m. ch.	m. ch.	m. ch.	m. ch.		m. ch.			
									</						

RAILWAY COMPANY.		Total Length of the Company's Railway open for Passenger Traffic and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, OR (Where the System is not continuous, enter separately one under the other, under the System by which worked.)											
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				On the Absolute Block System.						On the Permissive Block System.					
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							Worked by the Train Staff System in addition.	Worked without the Train Staff System.	Worked on Electrical Train Staff or Tablet System.						
ENGLAND AND WALES—continued.															
GREAT EASTERN— continued.	m. ch.	m. ch.	Breydon Junction	Yarmouth - -	m. ch. 1 13	m. ch.	m. ch.	m. ch.							m. ch.
			Rondham Junction.	Swaffham - -	—	18 23									
			Thetford Bridge -	Bury Junction -	—	12 39									
			Thetford West Junction.	Thetford Bridge -	0 69										
			Norwich, Thorpe -	Reedham - -	12 22										
			Whitlingham Junction.	Cromer - -	—	21 77									
			Wroxham - -	County School -	—	23 45									
			Wymondham -	Dereham - -	11 31										
			Dereham - -	Wells - - -	—	21 50									
			Trowse Upper Junction.	Trowse Lower Junction.	1 2										
			Reedham - -	Coke Ovens Junction.	—	10 61									
			Marsh Junction -	Swing Bridge Junction.	—	0 35									
			Fleet Junction -	Haddiseoe - -	—	0 71									
					521 37	395 33									
GREAT NORTHERN -	517 69	178 44	London - -	Askern - -	160 14	—	—	—	-	-	-	-	-	-	
			Finsbury Park -	Canonbury - -	1 31										
			Finsbury Park -	Finchley - -	4 70										
			Fletton Junction	Longville Junction	1 50										
			Finchley - -	High Barnet -	3 63										
			Highgate - -	Muswell Hill -	1 11										
			Wood Green -	Enfield - -	4 15										
			Welwyn Junction	Dunstable - -	0 44	17 2									
			Hitchin - -	Shepreth - -	17 62										
			Essendine - -	Ryhall - -	—	1 50									
			Sedgebrook -	Barkstone East Junction.	4 3										
			Werrington Junction.	Pyewipe Junction	60 26										
			Louth - -	Bardney - -	0 32	20 47									
			Barkstone Junction.	Boston - -	27 32										
			Kirkstead -	Horncastle -	0 15	7 10									
			Lincoln - -	Honington -	17 79										
			Washingboro'	Greetwell Junction, Lincoln.	1 0										
			Newark - -	Bottesford - -	9 26										
			Scalford - -	Waltham - -	0 10	3 43									
			Tilton - -	Leicester - -	11 29										
			Colwick East Junction.	Pinxton - -	18 22										
			Colwick West Junction.	Colwick North Junction.	0 58										
			Awsworth Junction.	Egginton Junction.	18 60										
			Egginton Junction.	Dove Junction -	1 21										
			Leen Valley Junction, Daybrook.	Newstead - -	7 55										
			Bromshall Junction.	Stafford - -	2 19	10 39									
			Holbeck - -	Bowling Junction	8 65										
			Ardley - -	Laister Dyke -	10 27										
			Laister Dyke -	Bradford Goods -	1 9										
			St. Dunstan's East.	Lancashire and Yorkshire Junction, Bradford.	0 58										
			Queensbury South.	Queensbury North	0 15										
			St. Dunstan's East.	St. Dunstan's West.	0 12										

RAILWAY COMPANY.		Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, OR (Where the System is not continuous, enter separately one under the other, under											
				WORKED BY TELEGRAPH - - - - -											
				On the Absolute Block System.						On the Permissive Block System.					
				From	To	Distance of Double Line.	Distance of Single Line.			From	To	Distance of Double Line.			
Worked by the Train Staff System in addition.	Worked without the Train Staff System.	Worked on Electrical Train Staff or Tablet System.													
ENGLAND AND WALES—continued.															
GREAT NORTHERN— continued.	m. ch.	m. ch.	Laister Dyke East	Shipley - -	m. ch. 6 11	m. ch.	m. ch.	m. ch.							m. ch.
			Quarry Gap -	Cutlers Junction -	0 27										
			Branch to Midland	Railway at Shipley	0 8										
			Stanningley -	Greenside, Pudsey	0 13	1 32									
			St. Dunstan's North.	Keighley - -	13 1										
			Branch to Midland	Railway, Keighley	0 16										
			Queensbury East	Holmfild - -	2 25										
			Wortley East -	Wakefield (Ings Junction).	9 55										
			Wortley South -	Wortley West -	0 23										
			Wrenthorpe South	Runtlings Lane Junction.	3 68										
			Runtlings Lane Junction.	Batley - -	—	2 70									
			Batley - -	Adwalton Junction.	3 12										
			Wrenthorpe North	Wrenthorpe West	0 29										
			Runtlings Lane Junction.	Dewsbury and Batley.	3 75										
			Boston - -	Grimsby - -	47 28										
			Grantham - -	Nottingham -	22 35										
			Firsby - -	Skegness - -	1 64	7 37									
			Louth - -	Mablethorpe -	0 22	11 42									
			Willoughby -	Sutton-on-Sea -	0 20	6 65									
			Sutton - -	Mablethorpe -	0 4	2 44									
			Bourn - -	Spalding - -	0 13	9 20									
		Spalding - -	Sutton Bridge -	0 5	15 13										
JOINT LINES.															
Great Northern and London and North-Western.	22 14		Saxondale Junction.	Stathern Junction	7 20										
			Bottesford North	Melton Mowbray Station.	14 74										
West Riding and Grimsby	28 0		Trent Lane Jn., Nottingham.	Daybrook Junction	3 69										
			Doncaster - -	Wakefield - -	19 10										
			Sandal Junction -	Walton Junction, Midland Railway.	0 56										
			Adwick Junction	Haggswood Junction.	6 65										
			Hare Park - -	Crofton Junction	1 29										
Methley Branch	5 55		Lofthouse North -	Methley - -	5 2										
			Lofthouse South -	Lofthouse East -	0 25										
Halifax and Ovenden	2 46		Halifax Junction	Holmfild - -	2 46										
Shepreth to Shelford Junction, see Great Eastern Railway.	575 24	178 44			575 63	117 32									
GREAT NORTHERN AND GREAT EASTERN JOINT.	58 19	—	Sleaford South Junction.	Junction with Sleaford Branch at Sleaford.	0 39	—	—	—	—	—	—	—	—	—	—
			Sleaford West Junction.	Sleaford North Junction.	2 8										
			Sleaford South Junction.	Junction with Honington Line, Lincoln.	20 4										
			Greetwell Junction	Pyewipe Junction, Lincoln.	3 10										
			Boultham Junction.	Holmes West Junction.	0 27										
			Pyewipe Junction	East Trent Junction, Gainsboro'.	14 45										
			West Trent Junction, Gainsboro'.	Black Carr Junction, Doncaster.	17 46										
	52 70	5 40	Huntingdon Junction with Great Northern.	St. Ives - -	—	5 40	—	—	—	—	—	—	—	—	—
			Needingworth Junction.	March Loop Junction.	16 23										
			Whitemoor Junction.	Spalding South Junction.	19 7										
			Spalding North Junction.	Sleaford South Junction.	17 40										
		111 9	5 40			111 9	5 40								

OF OTHER RAILWAYS WORKED BY THEM.

the Head applicable, each Main Line or Portion of Main Line or Branch Line so worked.)

WORKED BY TELEGRAPH.

Not on either of the foregoing Systems.

From	To	Distance of Double Line.	Distance of Single Line.	
			Worked by the Train Staff System in addition.	Worked without the Train Staff System.

Single Lines of Railway (not included in the foregoing Columns),
 (1.) Worked under the System in which only One Engine in Steam or Two or more Engines coupled together are allowed to be upon the Single Line or portions thereof at one and the same time; or
 (2.) Worked under the Train Porter System; or
 (3.) Worked under the Train Staff System.

From	To	Distance of			
		System as above. (1.)	Train Porter System. (2.)	Train Staff System. (3.)	
				With Tickets.	Without Ticket.

Length of the Portions of Company's Railway and of other Railways worked by them for Goods and Mineral Traffic only.

REMARKS.

		m. ch.	m. ch.	m. ch.		m. ch.	m. ch.	m. ch.	m. ch.	Double.	Single.
										m. ch.	m. ch.
					<i>Colliery and Goods Branches.</i>					1 26	
					Horton Junction City Road Goods	—	—	—	—		
					Pye Hill - Midland Railway	—	—	—	—		0 25
					Branch to Burton from North Staffordshire Railway.	—	—	—	—		0 40
					Palmerston Branch	—	—	—	—		0 36
					Cinder Hill	—	—	—	—		0 31
					Watnall	—	—	—	—		1 5
					Codnor Park	—	—	—	—		0 29
					West Hallam	—	—	—	—		0 17
										1 41	1 62
					Woolsthorpe Branch	—	—	—	—		5 40
					Bestwood Colliery Branch (Leen Valley Railway).	—	—	—	—		0 37
					Stanton Branch	—	—	—	—	0 9	3 13
					Eaton Branch	—	—	—	—		3 19
					Eastwell Branch	—	—	—	—		1 13
					Heanor Railway	—	—	—	—	0 51	0 22
					Branch to Lancashire and Yorkshire Railway at Methley.	—	—	—	—	0 28	
					Batley, West Soothill Colliery Junction.	—	—	—	—	0 42	
					Branch to Lancashire and Yorkshire Railway, Dewsbury.	—	—	—	—	0 48	
		0 35	48 59	—		—	—	—	*12 35	5 5	15 46
		—	—	—		—	—	—	—		
		—	—	—		—	—	—	—		
		—	—	—		—	—	—	—	0 11	Chatteris Dock branch single line.

* Also 6 chains double line under train staff system.

RAILWAY COMPANY.	Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, OR (Where the System is not continuous, enter separately one under the other, under)									
			WORKED BY TELEGRAPH									
			On the Absolute Block System.						On the Permissive Block System.			
			From	To	Distance of Double Line.	Distance of Single Line.			From	To	Distance of Double Line.	
	Worked by the Train Staff Service in addition.	Worked without the Train Staff System.				Worked on Electrical Train Staff or Tablet System.						
	Consisting of Two or more Lines of Rails.	Consisting of a Single Line of Rails only.										
ENGLAND AND WALES—continued.												
GREAT NORTHERN AND LONDON AND NORTH-WESTERN JOINT COMMITTEE.	m. ch.	m. ch.	Welham Junction	Melton Mowbray	m. ch.	m. ch.	m. ch.	m. ch.			m. ch.	
	22 75*	—	Melton Mowbray	Saxondale Junction.	—*						—	
			Hallaton Junction	Drayton Junction	3 30							
			Stathern Junction	Bottesford North	5 71							
					22 75							
GREAT WESTERN	1,075 36	1,160 2	Section 1.—Paddington to Penzance.									
			Paddington -	Plymouth† -	235 40	—	90 16	—				
			Truro -	Falmouth -	—	—	11 68					
			Bristol Loop	-	0 26							
			West London Junction.	North Pole Junction.	0 34							
			Southall -	Brentford -	3 47							
			West Drayton -	Uxbridge -	2 39							
			West Drayton Junction.	Staines -	—	6 0						
			Slough -	Windsor -	2 55							
			Slough West Fork	-	0 19							
			Maidenhead -	Kennington Junction.	—	36 57						
			Princes Risboro'	Aylesbury -	—	7 27						
			Didcot -	Winchester -	—	43 27						
			Reading West Fork	-	0 46							
			Southcote Junction.	Newbury -	15 27							
			Newbury -	Holt Junction -	8 34	32 35						
			Savernake -	Marlborough -	—	5 47						
			Bristol (South Wales Junction).	Severn Tunnel Junction West.	18 65							
			Narrows Hill Junction.	Ashley Hill Junction.	0 30							
			Bristol (North Somerset Junction.	Frome† -	3 51	19 55						
			Bathampton -	Bradford Junction	9 10							
			Westbury Junction.	Salisbury‡ -	4 54	19 51						
			Thingley Junction	Weymouth -	72 53							
			Dorchester Junction.	Dorchester, London and South-Western Railway.	0 23							
			Witham -	Wells Junction -	—	14 2						
			Wells -	Yatton -	—	17 43						
			Yatton -	Clevedon -	—	3 45						
			Portishead Junction.	Portishead -	1 41	8 7						
			Worle, Weston loop	Uphill Junction -	3 74							
			Durston -	Yeovil (Pen Mill)	0 10	19 76						
			Creech Junction -	Chard -	—	12 75						
			Norton Fitzwarren Junction.	Minehead -	—	22 60						
			Norton Fitzwarren Junction.	Barnstaple -	—	43 77						
			Tiverton Junction	Tiverton -	0 13	4 47						
			Tiverton -	Stoke Canon -	—	10 53						
			Morebath Junction.	Tiverton -	—	3 41						
			Tiverton Junction	Hemyock -	—	7 29						
			Newton Junction	Kingswear -	5 68	—	163					
			Newton Junction	Moretonhampstead	—	12 5						
			Totnes -	Ashburton -	—	9 16						
			Tavistock Junction.	Marsh Mills -	0 24							
			Marsh Mills -	Lidford -	—	19 19						

OF OTHER RAILWAYS WORKED BY THEM.

the Head applicable, each Main Line or Portion of Main Line or Branch Line so worked.)

WORKED BY TELEGRAPH.					Single Lines of Railway (not included in the foregoing Columns), (1.) Worked under the System in which only One Engine in Steam or Two or more Engines coupled together are allowed to be upon the Single Line or portions thereof at one and the same time; or (2.) Worked under the Train Porter System; or (3.) Worked under the Train Staff System.								Length of the Portions of Company's Railway and of other Railways worked by them for Goods and Mineral Traffic only.	REMARKS.
Not on either of the foregoing Systems.					From	To	Distance of							
From	To	Dis- tance of Double Line.	Distance of Single Line.				System as above. (1.)	Train Porter System. (2.)	Train Staff System. (3.).					
			Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.					With Tickets.	With- out Ticket.				
		m. ch.	m. ch.	m. ch.			m. ch.	m. ch.	m. ch.	m. ch.	m. ch.			
Par - -	St. Blazey	0 33	-	-	Watlington - -	Princes Risboro' -	-	-	8 70	-	-	* Melton Mowbray to Saxondale, 22 m. 14 ch., included in the Great Northern Company's return.		
Salisbury Junction.	London and South- Western Railway.	10			Twyford - -	Henley - - -	-	-	4 47			† Exclusive of the station yards at Southall, West Drayton, Slough, Read- ing, Didcot, Swindon, Chippenham, Bath, Bristol, and Exeter. The relief lines (up and down) between Porto- bello Junction and Maidenhead Bridge Junction are worked on the absolute block telegraph system.		
					Moulsford - -	Wallingford - -	-	-	3 27			‡ Exclusive of the station yards at Mells and Radstock.		
					Uffington - -	Faringdon - -	-	-	3 50			§ Exclusive of the station yard at Warminster.		
					Hallatrow - -	Camerton - -	3 50					Exclusive of the station yards at Westbury, Trowbridge, and Yeov- il.		
					Swindon Junction	Highworth - -	3 46							
					Dauntsey - -	Malmesbury -	6 43							
					Chippenham -	Calne - - -	5 21							
					Maiden Newton	Bridport West Bay	11 21							
					Upway Junction	Abbotsbury - -	6 9				0 30	From Brentford Passenger.		
					Portishead - -	Portishead Pier -	0 34				0 45	To Brentford Goods, Clifton May Bank Junction.		
					Heathfield - -	Ashton - - -	6 14				0 34	Exeter Basin.		
					Churston Junction	Brixham - - -	2 1				1 44	Ashton - Teign- house.		
					Bodmin Road -	Bodmin - - -	3 51				0 60	Totnes - Totnes Quay.		
											0 38	Dunball Siding.		
											0 76	Bridgwater Docks.		
											1 20	Treamble Gravel Hill.		
											1 6	Bugle - Carbis.		
											2 50	St. Denis Melangoose Junction. Mill.		
											4 31	St. Denis Drinnick Junction. Mill.		
											0 15	New Quay Lane Junc- tion.		
											0 14	Tiverton Goods Station.		
											1 38	Bristol Bristol Harbour.		
											0 5	St. Blazey Par Wharf.		
											2 43	Carn Brea Portreath.		
											0 43	North Crofty Branch.		
											0 70	Roskeare Branch.		
											0 50	Hayle Wharf Branch.		
											0 12	Chard Chard, Junction. London and South- Western Railway.		
											2 54	Burn- Drinnick gallow. Mill.		
											8 44	Tolcarn - Treamble.		
											0 33	Reading - Junction with South- Eastern Railway.		
											0 15	Winchester Goods Yard.		

RAILWAY COMPANY.		Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, OR (Where the System is not continuous, enter separately one under the other, under											
				WORKED BY TELEGRAPH - - - - -											
				On the Absolute Block System.						On the Permissive Block System.					
				From	To	Dis- tance of Double Line.	Distance of Single Line.			From	To	Dis- tance of Double Line.			
Worked by the Train Staff Service in addi- tion.	Worked without the Train Staff System.	Worked on Elec- trical Train Staff or Tablet System.													
ENGLAND AND WALES--continued.															
GREAT WESTERN-- continued.	m. ch.	m. ch.	Lidford - -	Launceston - -	m. ch.	m. ch.	m. ch.	m. ch.							m. ch.
			Yelverton - -	Princetown - -	- -	10 44									
			Gwincar Road -	Helston - -	- -	8 67									
			St. Erth Junction	St. Ives - -	- -	4 22									
			Bodmin Road -	Boscarnie - -	- -	- -	2 66								
			Fowey - - -	New Quay - -	- -	24 33									
						389 8	445 42	113 53	- -						
				Section 2.--Swindon to New Milford.											
				Swindon - -	New Milford -	207 47*	- -	- -	- -						
				Maindee Junction, East.	Maindee Junction, North.	0 17	- -						Velin Vach -	Tondu, North Box.	0 32
				Cardiff East Box -	East Branch Junction.	0 16	- -						Brogden's Sid- ing, Tondu.	Ogmore Sid- ing, Tondu.	0 35
				Carmarthen Bridge Junction.	Llandyssil -	- -	18 60								
				Whitland - -	Cardigan - -	- -	25 18								
				Neath Junction -	Neath - -	0 49									
				Landore - -	Swansea - -	1 23									
				Hafod Junction -	Morrison - -	0 15	1 67								
				Llanelly - -	Llandilo - -	- -	18 23								
				Pantyyfynnon -	Brynamman -	- -	6 46								
				Grange Court -	Rotherwas Junc- tion.	- -	- -	21 45							
				Over Junction -	Ledbury - -	5 24	12 12								
				Churchdown -	Lansdown Junc- tion.	3 10									
				Wye Valley Junc- tion.	Monmouth, Troy -	0 10	14 38								
				Monmouth, Troy -	Coleford - -	- -	5 20								
				Llantrissant -	Mwynddy Junc- tion.	0 48									
				Mwynddy Junc- tion.	Masaraul Junction	- -	- -	0 73							
				Blackmill - -	Gilfach - -	- -	4 47								
				Brynmenin - -	Pontycymmer -	0 44	4 3								
				Maesteg - -	Abergwynfl -	1 0	4 45								
				Blaenavon - -	Llantarnam Junc- tion.	8 12	3 31								
				Gaer Junction -	Park Junction -	0 70									
				Ebbw Junction -	Park Junction -	0 56									
				Courtybella Junc- tion.	Nantyglo - -	18 74	1 43								
				Aberbeeg - -	Ebbw Vale - -	2 72	3 7								
				Trevethin Junc- tion.	Talywain Junction	4 13									
				Bassaleg Junction	Brecon and Merthyr Rail- way.	0 4									
			Penarth Curve -	Penarth Curve, South Box.	0 50										
			Kemble - -	Tetbury - -	- -	7 19									
			Bridgend - -	Tondu - -	- -	2 29§									
						257 14	133 22	22 38	- -					0 67	

D 2

RAILWAY COMPANY.	Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, OR (Where the System is not continuous, enter separately one under the other, under									
			WORKED BY TELEGRAPH - - - - -									
			On the Absolute Block System.						On the Permissive Block System.			
			From	To	Distance of Double Line.	Distance of Single Line.			From	To	Distance of Double Line.	
Worked by the Train Staff System in addition.	Worked without the Train Staff System.	Worked on Electrical Train Staff or Tablet System.										
ENGLAND AND WALES—continued.												
GREAT WESTERN— continued.	m. ch.	m. ch.	Section 3.—Didcot to Chester.		m. ch.	m. ch.	m. ch.	m. ch.				m. ch.
			Didcot Avoiding Line	- - -	0 62	-	-	-	-	-	-	-
			Didcot West Curve	- - -	0 35							
			Didcot Station	Wellington Junction.*	108 12							
			Shrewsbury (Coton Hill).	Holyhead Junction, Saltney.	40 30							
			Market Drayton Junction.	Crudgington	4 0							
			Audlem	Nantwich Junction.	5 33							
			Abingdon	Radley	-	2 44						
			Swan Village Junction.	Horseley Field Junction.	1 45							
			Smethwick Junction.	Galton Junction	0 25							
			Handsworth Junction.	Stourbridge Junction.	8 39							
			Langley Green Junction.	Oldbury	1 21							
			Netherton Junction.	Halesowen	2 64	1 39						
			Lightmoor Junction.	Buildwas	2 24							
			Wrexham	To end of double line (Brymbo).	2 69							
			Gobowen	Oswestry	-	2 31						
			Llangollen Junction.	Dolgelly	-	44 76						
			Bala Junction	Blaenau	-	25 41						
			Ketley Junction	Lightmoor Junction.	-	4 41						
			Lightmoor Junction.	Madeley Junction	-	3 76						
						178 59	85 28					

OTHER RAILWAYS WORKED BY THEM.

Head applicable, each Main Line or Portion of Main Line or Branch Line so worked.)

WORKED BY TELEGRAPH.					Single Lines of Railway (not included in the foregoing Columns), (1.) Worked under the System in which only One Engine in Steam or Two or more Engines coupled together are allowed to be upon the Single Line or portions thereof at one and the same time; or (2.) Worked under the Train Porter System; or (3.) Worked under the Train Staff System.					Length of the Portions of Company's Railway and of other Railways worked by the same Company for Goods and Mineral Traffic only.	REMARKS.		
Not on either of the foregoing Systems.													
From	To	Dis- tance of Double Line.	Distance of Single Line.		From	To	Distance of						
			Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.			System as above. (1.)	Train Porter System. (2.)	Train Staff System. (3.)				
With Tickets.	With- out Ticket.												
		m. ch.	m. ch.	m. ch.			m. ch.	m. ch.	m. ch.	m. ch.			
Orderley Junction.	Midland Junction.	0 21	—	—	Honeybourne	Hatton	—	—	18 30	—	0 52	Tipton Basin.	
					Bearley	Alcester	6 40				0 73	Bushbury Junction.	
											0 70	Stafford Road.	
											0 79	Priestfield	
											0 11	Congreaves Collieries.	
											0 50	Hayes Lane Collieries.	
											3 4	Kingswinford Branch.	
											3 34	Wheat-sheaf Junction.	
											5 28	Brymbo Crossing.	
											0 14	Wednesbury Junction.	
											0 25	Stratford Goods Shed.	
											0 24	Stourbridge Goods Shed.	
											0 67	Withymoor Branch.	
											0 23	Swan Village Basin Branch.	
											1 61	Legacy Colliery.	
											0 14	Branch to Saltney Coal Stage.	
											0 56	Saltney Goods Junction.	
		0 21					6 40	—	18 30	—	20 45	* Exclusive of the station yards at Oxford, Banbury, Leamington, Wolverhampton, Wednesbury, and Birmingham.	
					Harton Road	Much Wenlock	—	—	11 57	—	0 29	From Witney	To Goods Shed.
					Moreton-in-Marsh	Shipton-on-Stour	9 18						
							9 18	—	11 57	—	0 29		

RAILWAY COMPANY.		Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, (Where the System is not continuous, enter separately one under the other, un												
				WORKED BY TELEGRAPH												
				On the Absolute Block System.						On the Permissive Block System.						
				From	To	Dis- tance of Double Line.	Distance of Single Line.			From	To	Dis- tance of Double Line.				
Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.	Worked on Elec- trical Train Staff or Tablet System.														
ENGLAND AND WALES—continued.																
GREAT WESTERN— continued.	m. ch.	m. ch.	Section 5.—Worcester to Swansea.		m. ch.	m. ch.	m. ch.	m. ch.								
			Worcester	Shelwick Junction	25 67	—	1 56	—								
			Tenbury	Bewdley	—	15 21										
			Ross	Little Mill Junc- tion.	—	28 51										
			Kington Junction	Kingsland	—	5 0										
			Hereford (Barton)	Towards Hay	—	—	0 19									
			Rotherwas Junc- tion.	Barrs Court (Ay- leston Bridge).	1 3											
			Barrs Court Junction.	Barton	1 8											
			Gelly Tarw	Mardy Junction	0 57	5 23										
			Pontypool Road (North Junction).	Maindee Junc- tion West.	8 55											
			Neath Junction	Swansea (South Dock).	8 14											
			Hereford (Barton)	Glynneath*	64 36	0 64										
			Glynneath	Resolven	2 74											
			Resolven	Neath Junction	5 44											
					118 38	54 15	2 59	—								
	SUMMARY:—															
				Section 1		389 8	445 42	113 53	—							
				" 2		257 14	133 22	22 38								
				" 3		178 59	85 28	—								
				" 4		91 13	85 12	39 46								
			" 5		118 38	54 15	2 59									
			Goods Lines†		‡	‡	—									
					1,075 36	1,160 2										
					1,034 52	803 39	178 36	—								
Sections upon which the Block System is being introduced.																
			Section 1.													
			Southcote Junc- tion.	Basingstoke	16 29											
			Basingstoke Junc- tion.	L & S. W. Rail- way.	0 6											
			Section 2.													
			Tondu	Maesteg	—	6 7										
			Brynmenin	Nantymoel	—	6 70										
			Tondu	Brynmenin	0 73	—										
					16 28	12 77	—	—								
HAMMERSMITH AND CITY.	2 77	—	Westbourne Park	Hammersmith and Shepherd's Bush Junction.	2 77	—	—	—								
HULL, BARNSELY, AND WEST RIDING JUNCTION RAIL- WAY AND DOCK.	59 6	—	Stairfoot	Hull, Alexandra Dock.	55 73	—	—	—								
			Cudworth South Junction.	Midland Station	1 22											
			Hemsworth East	Great Northern Junction.	0 51											
			Gowdall Junction	Hensall Junction, Lancashire and Yorkshire Rail- way.	0 40											
			Beverley Road	Cannon Street	0 60											
					59 6											

RAILWAY COMPANY.	Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, O									
			(Where the System is not continuous, enter separately one under the other, and									
			WORKED BY TELEGRAPH - - - - -									
			On the Absolute Block System.						On the Permissive Block System.			
	From	To	Dis- tance of Double Line.	Distance of Single Line.			From	To	Di- tan- ce of Dou- ble Line.			
Worked by the Train Staff System in addi- tion.				Worked without the Train Staff System.	Worked on Elec- trical Train Staff or Tablet System.							
ENGLAND AND WALES—continued.												
ISLE OF WIGHT -	m. ch. 1 0	m. ch. 10 27	Ryde - -	Sandown - -	m. ch. 1 0	m. ch. 4 25	m. ch. —	m. ch. —	-	-	-	m.
BRADING HARBOUR RAILWAY.	—	2 61										
	1 0	13 8										
ISLE OF WIGHT (CENTRAL).	—	33 60	Ryde - -	Newport - -	—	8 40	—	—	-	-	-	-
			Newport - -	Freshwater -		12 0						
						20 40						
LANCASHIRE AND YORKSHIRE.	455 14	16 19	Victoria Station, Manchester.	Goose Hill Junc- tion, Norman- ton.	50 31½	—	—	—	Through Victoria Station	-	-	-
			Wakefield (Whitham's Sid- ings).	Goole (Mineral Junc- tion).	27 9½	—	—	—	Through Wakefield Station.			
			Miles Platting -	Staley Bridge -	6 40½							
			Milner Royd Junction.	Bradford - -	11 15½							
			Low Moor - -	Mirfield and Thornhill.	10 17							
			Dryclough Junc- tion.	Stainland - -	2 63							
			Springwood Junc- tion.	Penistone - -	12 70½							
			Todmorden - -	Gannow Junction, Burnley.	9 53½							
			Rochdale via Oldham	Middleton Junc- tion.	9 58							
			Royton Junction	Royton - -	1 15½							
			Middleton Junc- tion.	Middleton - -	1 2½							
			Rochdale - -	Facit - -	1 0	4 8½						
			Facit - -	Bacup - -	3 3½							
			Victoria (4 lines of rails).	Newton Heath -	2 24½							
			Dewsbury Junc- tion.	Dewsbury - -	1 42½							
			Horbury Junction	Barnsley - -	8 1½							
			Woolley Tunnel -	- - - -	-	0 79						
			Sowerby Bridge -	Ripponden - -	3 0½							
			Ripponden - -	Rishworth - -	—	0 60						
			Clayton West Branch -	- - - -	—	3 37½						
			Pontefract - -	Methley Junction	4 51½							
			Victoria Station, Manchester.	Bury Junction, Bolton.	10 53½							
			Sandhills - -	Southport - -	17 4½							
			Southport - -	Wigan - -	16 75½							
			Ormskirk - -	Rainford Junc- tion.	5 78½							
			Walton Junction	Preston - -	27 70							
			Preston Junction	Colne - -	24 26½							
			Bolton (Blackburn Junction).	Hellifield - -	37 8½	—	—	—	Through Blackburn Station.			
			Liverpool (Ex- change).	Castleton - -	40 15½	—	—	—	Through Bolton Station.			
			Great Harwood Junction.	Padiham Junction, Rose Grove.	9 3							
			Clifton Junction -	Accrington - -	18 51½							
			Lostock Junction	Euxton Junction.	11 70							
			Crow Nest Junc- tion.	Red Moss Junc- tion.	3 13½							
			Stubbins Junction	Bacup - -	7 38							
			Cheetham Hill Junction.	Bradley Fold -	8 74							
			Knottingley - -	Askern - -	10 41½							
			Hollinwood Branch -	- - - -	4 5½							
			Oakenshaw Branch -	- - - -	0 44½							
			Brighouse - -	Wyke - -	3 71½							

OF OTHER RAILWAYS WORKED BY THEM.

the Head applicable, each Main Line or Portion of Main Line or Branch Line so worked.)

WORKED BY TELEGRAPH.					Single Lines of Railway (not included in the foregoing Columns), (1.) Worked under the System in which only One Engine in Steam or Two or more Engines coupled together are allowed to be upon the Single Line or portions thereof at one and the same time; or (2.) Worked under the Train Porter System; or (3.) Worked under the Train Staff System.							Length of the Portions of Company's Railway and of other Railways worked by them for Goods and Mineral Traffic only.	REMARKS.	
Not on either of the foregoing Systems.					From	To	Distance of							
From	To	Dis- tance of Double Line.	Distance of Single Line.				System as above. (1.)	Train Porter System. (2.)	Train Staff System. (3.)					
			Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.					With Tickets.	With- out Ticket.				
-	-	-	m. ch.	m. ch.	m. ch.	Sandown -	Ventnor -	-	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	
						Brading -	Bembridge -	-	-	-	-	2 61	-	
-	-	-	-	-	-	Cowes -	Sandown -	-	-	-	13 20	-	-	
-	-	-	-	-	-	Lockwood Junction. Tottington Branch	Meltham -	-	-	-	3 43½	-	0 42½	Clitheroe Lime Siding.
								-	-	-	3 30½	-	1 38	Silkstone Branch.
													0 71	Oldham Road Branch.
													0 26½	Beswick Branch.
													2 15½	Huddlesden Branch.
													1 0½	Heap Bridge Branch.
													0 60½	North Docks Branch.
													0 18	Blackburn (King Street) Branch.
													1 77½	Kersley Branch.
													1 8	Astley Bridge Branch
													1 0	Bankfield Branch.
													0 37	Great Howard Street Old Line.
													0 47½	Fleetwood Dock Branch.

RAILWAY COMPANY.	Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, OR (Where the System is not continuous, enter separately one under the other, under										
			WORKED BY TELEGRAPH - - - - -										
	Consisting of Two or more Lines of Rails.	Consisting of a Single Line of Rails only.	On the Absolute Block System.						On the Permissive Block System.				
			From	To	Distance of Double Line.	Distance of Single Line.			From	To	Distance of Double Line.		
						Worked by the Train Staff System in addition.	Worked without the Train Staff System.	Worked on Electrical Train Staff or Tablet System.					
ENGLAND AND WALES—continued.													
LANCASHIRE AND YORKSHIRE — continued.	m. ch.	m. ch.	Brookholes Junction.	Holmfirth	m. ch.	1 08	m. ch.	—	Hulme Lane.	Ardwick Junction (Lancashire and Yorkshire).			
			Ardwick Branch	- - -	1 09½								
			North Mersey Branch	- - -	5 38								
			Windsor Bridge Junction.	Crow Nest Junction.	13 74½								
			Blackrod -	Horwich including Fork.	1 61½								
			Hindley Junction	Pemberton Junction.	3 38½								
			Dobbs Brow Junction.	Dixonson Lane Junction - -	1 24½								
					455 14		9 25½						
LANCASHIRE AND YORKSHIRE AND LONDON AND NORTH-WESTERN JOINT LINES:—													
NORTH UNION -	5 71	—	Euxton Junction	Preston - -	5 71	—	—	—	- - -	- - -	- - -	- - -	- - -
PRESTON AND WYRE	36 48½	—	Throughout.		36 48½	—	—	—	- - -	- - -	- - -	- - -	- - -
PRESTON AND LONG-RIDGE.	—	7 74	- - -	- - -	—	—	—	—	- - -	- - -	- - -	- - -	- - -
OVENDEN BRANCH AND METHLEY JOINT. See Great Northern.													
LANCASHIRE AND YORKSHIRE AND LANCASHIRE UNION JOINT LINE.	12 31	—	Cherry Tree Junction.	Chorley Junction	12 31	—	—	—	- - -	- - -	- - -	- - -	- - -
	0 48		Spring Wood Junction.	Huddersfield -	0 48	—	—	—	- - -	- - -	- - -	- - -	- - -
LANCASHIRE AND YORKSHIRE AND GREAT NORTH-EASTERN RAILWAY.	0 43	—	Leeds Joint -	- - -	0 43	—	—	—	- - -	- - -	- - -	- - -	- - -
Total	56 1½	7 74			56 1½	—	—	—					
LISKEARD AND CARADON.													
	—	6 74	- - -	- - -	—	—	—	—	- - -	- - -	- - -	- - -	- - -
LONDON AND NORTH-WESTERN.													
	1,406 66	308 1	Euston - -	Stafford - -	133 40	—	—	—	- - -	- - -	- - -	- - -	- - -
			Roade Junction -	Rugby - -	25 12								
			Kentish Town Junction.	Willesden (Harlesden Junction).	4 53								
			Harlesden Junction.	North Pole Junction.	1 14								
			Willesden High Level Junction.	Acton Wells Junction (North and South - West Junction Railway).	0 56								
			Kensal Green Junction.	Willesden (No. 2 Cabin).	0 26								
			Willesden (No. 1 Cabin).	Willesden (Mitre Bridge Junction).	0 27								
			Watford - -	St. Albans -	—	7 0							
			Watford - -	Rickmansworth -	—	4 40							
			Cheddington -	Aylesbury - -	—	7 20							
			Leighton - -	Dunstable -	7 0								
			Bletchley - -	Oxford - -	31 40								
			Verney Junction -	Banbury - -	—	21 39							
			Bletchley - -	Bedford - -	16 0								
			Bedford - -	Sandy - -	—	—	—	8 40					

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			WORKED BY TELEGRAPH - - - - -									
			On the Absolute Block System.						On the Permissive Block System.			
			From	To	Distance of Double Line.	Distance of Single Line.			From	To	Distance of Double Line.	
	Worked by the Train Staff System in addition.	Worked without the Train Staff System.				Worked on Electrical Train Staff or Tablet System.						
ENGLAND AND WALES—continued.												
LONDON AND NORTH-WESTERN—continued	m. ch.	m. ch.	Sandy - - -	Cambridge - - -	m. ch. 21 20	m. ch.	m. ch.	m. ch.				m. ch.
			Nuneaton - - -	Blaby Junction - - -	15 40							
			Weedon - - -	Daventry - - -	—	4 0						
			Blisworth - - -	Peterborough - - -	47 21							
			Duston (West Junction). - - -	Market Harboro' - - -	18 43							
			Rugby - - -	Yarwell Junction, Wansford. - - -	43 21							
			Northampton (Bridge Street Junction). - - -	Duston (North Junction). - - -	0 20							
			Seaton - - -	Luffenham - - -	3 60							
			Rugby - - -	Stafford, via Stour Valley. - - -	57 14							
			Coventry - - -	Nuneaton - - -	9 61							
			Dudley Port - - -	Sedgley Junction - - -	0 33							
			Birmingham (Proof House Junction). - - -	Pleck Junction (Bescot Loop). - - -	9 35							
			Aston - - -	Lichfield, via Sutton Coldfield. - - -	13 56							
			Bescot Junction - - -	Wednesbury Junction (Bescot Curve). - - -	0 35							
			Bescot Junction - - -	Bushbury - - -	6 60							
			Dudley - - -	Wichnor - - -	23 46							
			Walsall - - -	Rugeley, Trent Valley. - - -	14 27							
			Aston (Stechford Junction). - - -	Stechford - - -	2 60							
			James Bridge Junction. - - -	Pleck Junction - - -	1 12							
			Wednesbury (Darlaston Junction). - - -	Portway Crossing (Darlaston Branch). - - -	—	0 39						
			Bloomfield Junction. - - -	Wednesbury (Darlaston Junction Box). - - -	2 76							
			Tipton Curve Junction. - - -	Tipton (Stour Valley). - - -	0 18							
			Rugby - - -	Berkswell Junction. - - -	24 57							
			Kenilworth Junction. - - -	Coventry - - -	—	3 78						
			Portobello Junction. - - -	Heath Town Junction. - - -	1 24							
			Perry Barr Station Junction. - - -	Soho Soap Works Junction. - - -	2 66							
			Perry Barr North Junction. - - -	Handsworth Junction. - - -	0 6							
			Soho East Junction. - - -	Harborne Junction. - - -	0 21							
			Stafford - - -	Euxton Junction - - -	70 9							
			Kenyon Junction - - -	Edgehill Junction - - -	16 58							
			Huyton Junction - - -	Spring's Branch Junction. - - -	12 62							
			Spring's Branch Junction. - - -	Roe Green Junction. - - -	9 76							
			Weaver Junction - - -	Lime Street - - -	18 79							
			Broadheath - - -	Ditton Junction - - -	18 20							
			Widnes - - -	St. Helen's - - -	6 40							
			Edgehill - - -	Canada Dock - - -	4 53							
			Alexandra Dock Junction. - - -	Alexandra Dock - - -	1 11							
			Halton Junction - - -	Frodsham Junction. - - -	1 53							
			Preston Junction - - -	Golborne Junction. - - -	0 52							
			Winwick Junction - - -	Earlestown Junction. - - -	1 37							
		Ince Moss Junction. - - -	Platt Bridge Junction. - - -	0 43								
		Kenyon Junction - - -	Tyldesley - - -	5 20								
		Pennington - - -	Bolton - - -	8 25								
		Atherton Junction - - -	Chowbent West Junction. - - -	0 20								
		Atherton Junction - - -	Chowbent East Junction. - - -	0 20								

OTHER RAILWAYS WORKED BY THEM.

Head applicable, each Main Line or Portion of Main Line or Branch Line so worked.)

WORKED BY TELEGRAPH.					Single Lines of Railway (not included in the foregoing Columns), (1.) Worked under the System in which only One Engine in Steam or Two or more Engines coupled together are allowed to be upon the Single Line or portions thereof at one and the same time; or (2.) Worked under the Train Porter System; or (3.) Worked under the Train Staff System.					Length of the Portions of Company's Railway and other Railway worked by them for Goods and Mineral Traffic only.	REMARKS.	
Not on either of the foregoing Systems.					From	To	Distance of					
From	To	Dis- tance of Double Line.	Distance of Single Line.				System as above. (1.)	Train Porter System. (2.)	Train Staff System. (3.)			
			Worked by the Train Staff System in addi- tion.	Worked <i>without</i> the Train Staff System.					With Tickets.			With- out Ticket.
		m. ch.	m. ch.	m. ch.			m. ch.	m. ch.	m. ch.	m. ch.		
					Leighswood Junction.	Aldridge Colliery	—	—	—	—	2 40	Single.
					Norton Junction -	East Cannock Junction.	—	—	—	—	5 20	Partly single and partly double.
					Hawkesbury Lane	Wyken Colliery -	—	—	—	—	0 70	Single.
					Griff Junction -	Stanley's Colliery	—	—	—	—	1 49	"
					Soho - -	Soho Pool - -	—	—	—	—	0 51	"
					Aston Junction -	Windsor Street -	—	—	—	—	1 0	Double.

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			WORKED BY TELEGRAPH -										
			On the Absolute Block System.						On the Permis-ive Block System				
			From	To	Dis- tance of Double Line.	Distance of Single Line.			From	To			
Worked by the Train Staff System in addition.	Worked without the Train Staff System.	Worked on Elec-trical Train Staff or Tablet System.											
	Con-sisting of Two or more Lines of Rails.	Con-sisting of a Single Line of Rails only.											
ENGLAND AND WALES—continued.													
LONDON AND NORTH-WESTERN—continued.	m. ch.	m. ch.	Northwich - .	Sandbach - .	m. ch.	m. ch.	m. ch.	m. ch.					
			Rainford Junction	Gerrard's Bridge Junction.	—	9 20	4 11						
			St. Helen's Junction.	Sutton Oak Junction.	0 40								
			Timperley Junction.	Broadheath Junction.	0 23								
			Allerton (Gars-ton Junction).	Garston Junction with Cheshire Lines.	1 1								
			Winsford Junction	Over and Wharton Station.	1 0								
			Walton Junction	Arpley Junction -	1 5								
			Hartford Junction	Greenbank Junction.	0 68								
			Fir Tree House Junction.	Haigh Junction -	5 19								
			Bamfurlong Junction.	Amberswood West Junction.	1 17								
			Standish Junction	Whelley Junction	1 20								
			Bickershaw Junction.	Strangeways East	0 50								
			Kenyon Junction	Manchester (Ex-change Station).	12 66								
			Eccles Junction -	Bolton - -	8 0								
			Crewe - . . .	London Road, Manchester.	31 0								
			Cheadle Hulme -	Macclesfield -	9 45								
			Buxton - . .	Edgeley Junction	18 66								
			Edgeley Junction	Northenden Junction.	3 0								
			Heaton Norris Junction.	Guide Bridge -	5 35								
			Denton Junction	Crowthorn Junction.	1 18								
			Denton Junction	Dukinfield - -	1 26								
			Droylsden - .	Ashton Moss Junction.	2 0								
			Stalybridge - .	Heaton Lodge -	21 43								
			Greenfield -	Mumps Junction	3 68								
			Thornhill Junction	Leeds (Copley Hill).	10 0								
			Wortley Junction	Leeds (Canal Box).	1 0								
			Bradley Wood -	Bradley Junction	1 17								
			Davenport Junction.	Cheadle Village Junction.	9 73								
			Kirkburton Junction.	Kirkburton -	—	4 26							
			Birstall Junction	Birstall Station -	—	1 71							
			Middlewood Curve -	- - -	0 33								
			Preston - . .	Carlisle - -	89 77								
			Delph Junction -	Delph Station -	—	1 51							
			Stalybridge - .	Diggle - - -	7 67								
			Oxenholme - -	Windermere - -	10 20								
			Low Gill Junction	Ingleton Junction	18 64								
			Morecambe South Junction.	Bare Lane - -	0 55								
			Morecambe -	Hest Bank - -	—	3 8							
			Lancaster - . .	Glasson Dock -	—	5 4							
			Whitehaven -	Maryport Level Crossing.	12 14								
		Workington (Der-went Junction).	Cockermouth Junction.	7 51									
		Crewe - - -	Holyhead - -	105 24									
		Mold Junction -	Denbigh - - -	25 70									
		Denbigh - . .	Corwen - - -	—	18 58								
		Foryd Junction -	Denbigh Junction	—	9 1								
		Llandudno Junction.	Llandudno - -	3 14									
		Llandudno Junction.	Blaenau Ffestiniog	—	27 27								
		Bangor - . .	Bethesda - -	—	4 22								
		Menai Bridge -	Carmarvon Quay Junction.	7 6									

OTHER RAILWAYS WORKED BY THEM.

Head applicable, each Main Line or Portion of Main Line or Branch Line so worked.)

WORKED BY TELEGRAPH.

Not on either of the foregoing Systems.

Single Lines of Railway (not included in the foregoing Columns),
 (1.) Worked under the System in which only One Engine in Steam
 or Two or more Engines coupled together are allowed to be
 upon the Single Line or portions thereof at one and the same time; or
 (2.) Worked under the Train Porter System; or
 (3.) Worked under the Train Staff System.

From	To	Dis- tance of Double Line.	Distance of Single Line.		From	To	Distance of				Length of the Portions of and of other Railways worked Goods and Mineral Traffic	REMARKS.
			Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.			System as above. (1.)	Train Porter System. (2.)	Train Staff System (3.)			
									With Tickets.	With- out Ticket.		
		m. ch.	m. ch.	m. ch.			m. ch.	m. ch.	m. ch.	m. ch.		
					Parkside - -	Lowton Junction	-	-	-	-	0 20	Double.
					Ravenhead Branch -	-	-	-	-	-	1 40	Single.
					Pocket Nook Branch -	-	-	-	-	-	0 60	"
					Broad Oak Branch -	-	-	-	-	-	0 20	"
					Haydock Junction	Old Fold -	-	-	-	-	1 0	"
					Havannah Branch -	-	-	-	-	-	1 26	"
					Moss Hall Branch -	-	-	-	-	-	0 65	"
					Dallam Branch -	-	-	-	-	-	0 60	"
					St. Helen's Junction.	Sutton Bank Clock Face.	-	-	-	-	0 60	"
					Sutton Oak Junction.	Carr Mill Junction	-	-	-	-	3 25	Double.
					Diggles Junction	Diggles Siding -	-	-	-	-	1 0	Single.
					Runcorn Dock Branch -	-	-	-	-	-	1 78	"
					Edge Lane Junction.	Olive Mount Junction.	-	-	-	-	0 44	Double.
					Speke Junction -	Garston Junction	-	-	-	-	0 70	"
					Garston Dock Branches -	-	-	-	-	-	1 76	Single
					Bickershaw Junction.	Pennington Junction.	-	-	-	-	3 37	Double.
					Edgehill Circular Lines -	-	-	-	-	-	1 20	"
					Edgehill (Pighue Lane).	Exhibition Sid- ings Junction.	-	-	-	-	0 30	"
					Wortley Junction	Farnley Iron Works.	-	-	-	-	1 0	Single.
					Whaleybridge -	Cromford -	-	-	-	-	33 0	"
					Little Hutton Mineral Branch -	-	-	-	-	-	1 11	"
					Patricroft - -	Clifton Junction -	-	-	-	-	3 43	Double.
					Maryport Dock Junction.	Maryport Dock -	-	-	-	-	0 70	Single.
					Holyhead - -	Holyhead Pier -	1 5	-	-	-		
					Foryd - -	Foryd Pier -	-	-	-	-	0 61	Single.
					Padeswood - -	Coed Talon - -	-	-	-	-	2 30	"
					Coed Talon - -	End of London and North- Western Line on Frith Branch.	-	-	-	-	1 13	"
					Coed Talon - -	Tryddyn Junction	-	-	-	-	4 22	Single.
					Junction with Frith Branch.	Junction with Mold and Tryd- dyn Branch.	-	-	-	-	0 26	"
					Prestatyn - -	Dyserth - -	-	-	-	-	2 69	"
					Pen-y-groes - -	Nantlle - -	-	-	-	1 34		
					Penrhyn Junction	Port Penrhyn -	-	-	-	-	1 22	"

RAILWAY COMPANY.	Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, (Where the System is not continuous, enter separately one under the other, u									
	Con- sisting of Two or more Lines of Rails.	Con- sisting of a Single Line of Rails only.	WORKED BY TELEGRAPH - - - - -									
			On the Absolute Block System.						On the Permissive Block System			
			From	To	Dis- tance of Double Line.	Distance of Single Line.			From	To		
						Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.	Worked on Elec- trical Train Staff or Tablet System.				
ENGLAND AND WALES—continued.												
LONDON AND NORTH-WESTERN—continued.	m. ch.	m. ch.	Carnarvon Quay Junction.	Llanberis - -	m. ch.	m. ch.	m. ch.	m. ch.				m.
			Carnarvon Quay Junction.	Afonwen - -	-	8 39						
			Gaerwen - -	Amlwch - -	17 46							
			Crewe (Salop Junction).	Shrewsbury (Crewe Junction).	32 26							
			Whitchurch (Chester Junction).	Tattenhall Junction (Crewe and Chester Line).	14 15							
			Wellington Junction (East).	Stafford S. U. Junction.	18 32							
			Hadley Junction -	Coalport - -	-	7 63						
			Abergavenny Junction.	Nantybwh - -	13 74							
			Rhymney Bridge -	Dowlais Top -	-	1 39						
			Dowlais Top -	Morlais Junction	2 64							
			Penywn Junction.	Dowlais, Ivor Junction.	0 14							
			Brynmaur -	Garndiffraith Junction.	-	7 69						
			Garndiffraith Junction.	Abersychan (Junc- tion with Lon- don and North- Western and Great Western Joint Line).	0 19							
			Ebbw Vale Junc- tion.	Ebbw Vale - -	-	1 40						
			Nantybwh - -	Tredegar - -	-	1 74						
			Tredegar - -	Bedwellty Pitts -	1 75							
			Bedwellty Pitts -	Tredegar Junc- tion.	-	7 7						
			Tredegar Junction	Nine Mile Point -	4 32							
			Tredegar Junction (London and North-Western).	Tredegar Junction (Great Western Railway).	0 17							
			Craven Arms -	Knighton - -	12 17							
			Knighton - -	Llanbister Road -	-	9 32						
			Llanbister Road -	Penybont Junc- tion.	6 8							
			Penybont Junc- tion.	Penybont - -	-	0 44						
			Penybont - -	Llandrindod -	3 42							
			Llandrindod -	Llandovery - -	-	27 37						
			Pontardulais -	Gowerton - -	-	5 3						
			Gowerton - -	Llanmorlais -	-	5 1						
			Gowerton - -	Killay - -	2 62							
			Killay - -	Swansea Bay -	-	3 49						
			Swansea Bay -	Swansea (No. 2 Box).	0 60							
			Swansea (No. 2 Box).	Swansea (Passen- ger Station).	-	0 16						
					1,268 23	259 75	-	8 40				
			Two extra lines—Camden -	Roads - -	58 40							
			Stafford - -	Crewe - -	24 4							
			Huyton Quarry -	Liverpool, Lime Street.	55 3							
			Widnes Junction	Speke Junction -	5 40							
			Bamfurlong Junc- tion.	Golborne Junction	3 48							
			Hillhouse - -	Heaton Lodge -	3 14							
			Longsight - -	Heaton Norris -	3 15							
			Heaton Norris Temporary Jn.	Denton Junction -	4 22							
			Stockport - -	Edgeley Junction	0 26							
			Cross Lane - -	Barton Moss -	4 2							
			Ardwick - -	Hyde Road - -	0 43							

OF OTHER RAILWAYS WORKED BY THEM.

the Head applicable, each Main Line or Portion of Main Line or Branch Line so worked.)

WORKED BY TELEGRAPH.					Single Lines of Railway (not included in the foregoing Columns), (1.) Worked under the System in which only One Engine in Steam or Two or more Engines coupled together are allowed to be upon the Single Line or portions thereof at one and the same time; or (2.) Worked under the Train Porter System; or (3.) Worked under the Train Staff System.								REMARKS.
Not on either of the foregoing Systems.					From	To	Distance of				Length of the Portions of Company's and of other Railways worked by Goods and Mineral Traffic only		
From	To	Dis- tance of Double Line.	Distance of Single Line.				System as above. (1.)	Train Porter System. (2.)	Train Staff System. (3.)				
			Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.					With Tickets.	With- out Ticket.			
m. ch.	m. ch.	m. ch.					m. ch.	m. ch.	m. ch.	m. ch.	m. ch.		
					Waeonavon -	Waeonavon Col- lery.	-	-	-	-	0 60	Single.	
					Blaenavon -	Varteg Hill Col- lery.	-	-	-	-	1 44	"	
					Brynmawr -	Nantyglo -	-	-	-	-	1 35	"	
					Cwm Bargoed Junction.	Engine Shed Sid- ing (CwmBar- goed Branch).	-	-	-	-	0 52	"	
					Three extra lines— Crewe North Junction.	Crewe Coal Yard -	-	-	-	-	0 45		
					Bamfurlong Junc- tion.	Spring's Branch Junction.	-	-	-	-	1 8		
					Two extra lines— Crewe North Junction.	Sydney Bridge -	-	-	-	-	1 13		
					Warrington Sta- tion.	Winwick Junction	-	-	-	-	3 47		
					Platt Bridge Junction.	Spring's Branch -	-	-	-	-	0 74		
					Coppull Station -	Darlington's Sid- ing.	-	-	-	-	0 25		
					Spring's Branch Junction.	Wigan (Canal Box).	-	-	-	-	0 68		
					Sutton Oak Junc- tion.	Clock Face Sidings	-	-	-	-	1 0		
					Sutton Oak Junc- tion.	St. Helen's Junc- tion.	-	-	-	-	0 40		
					Hyde Road -	Ardrwick -	-	-	-	-	0 43		
					Hillhouse No. 1 -	Hillhouse No. 2 -	-	-	-	-	0 20		
					Chelford Up and Down Loops -	-	-	-	-	-	0 69		
					One extra line— Dudley Port -	Dudley -	-	-	-	-	1 9		
					Basford Wood -	Crewe South Junction.	-	-	-	-	0 60		
					Hartford Station -	Hartford Junc- tion.	-	-	-	-	0 69		
					Ince Moss Junc- tion.	Spring's Branch Junction.	-	-	-	-	0 35		
					Lea Green -	Rainhill -	-	-	-	-	1 5		
					Top of Whiston -	Point west of Rainhill.	-	-	-	-	0 27		
					Wigan Canal -	Wigan Station -	-	-	-	-	0 50		
					Pocketnook Junc- tion.	St. Helen's Sta- tion.	-	-	-	-	0 16		
					Speke Junction -	Allerton Junction	-	-	-	-	0 40		
					Adswold -	Edgeley Junction	-	-	-	-	0 76		
					Huddersfield -	Hillhouse (Fifth line).	-	-	-	-	0 30		
					Ashbridge -	Jubilee Sidings, No. 1 Loop.	-	-	-	-	0 66		
					Ashbridge -	No. 2 Loop -	-	-	-	-	0 38		

RAILWAY COMPANY.		Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, OR (Where the System is not continuous, enter separately one under the other, under											
				WORKED BY TELEGRAPH - - - - -											
				On the Absolute Block System.						On the Permissive Block System.					
				From	To	Distance of Double Line.	Distance of Single Line.			From	To	Distance of Double Line.			
Worked by the Train Staff System in addition.	Worked without the Train Staff System.	Worked on Electrical Train Staff or Tablet System.													
ENGLAND AND WALES—continued.															
LONDON AND NORTH-WESTERN—continued.	m. ch.	m. ch.	Cross Lane -	Ordsall Lane -	m. ch. 1 0	m. ch.	m. ch.	m. ch.							m. ch.
			Golcar -	Hillhouse -	3 41										
			Golcar -	Rotcher Lane -	2 1										
			One extra up line—Nuneaton -	Rugby -	—	—	14 20								
			Ordsall Lane -	Manchester Exchange Station.	—	—	1 0								
					1,387 52	259 75	15 20	8 40							
JOINT LINES.															
Whitehaven, Cleator, and Egremont.			Whitehaven, Mirehouse Junction.	Marron Junction -	15 69										
			Moor Row Junction.	Gutterby -	—	1 4									
Dundalk and Greenoro. See IRELAND.			Egremont -	Sellafield -	—	5 16									
			Gutterby -	Egremont -	1 27										
			Parton -	Distington -	—	3 0									
London and North-Western and Great Western.			Abersychan and Talywain (Junction with London and North-Western Railway).	Abersychan and Talywain (Junction with Great Western Railway).	0 27										
Rhymney Joint Railway.			Nantybwlch -	Rhymney Bridge	1 51										
			Rhymney Bridge.	Rhymney -	—	1 41									
Merthyr Extension Joint Line.			Morlais Junction	Rhydyar Junction.	—	4 61									
			Line worked.												
Harborne Railway.			Harborne Junction.	Harborne -	—	2 35									
GRAND TOTAL	1,406 66	308 1			1,406 66	277 72	15 20	8 40							
LONDON AND NORTH-WESTERN AND GREAT WESTERN JOINT.															
LONDON AND NORTH-WESTERN AND MIDLAND.* (Ashby and Nuneaton Joint Line.)	111 63	45 61	Shrewsbury (Crewe Junction).	Dinmore (North end of Tunnel).	42 49	—	—	—	-	-	-	-	-	-	-
			Dinmore Station	Hereford (South end of Station).	7 39										
			Hereford (Rotherwas Junction).	Hereford (Redhill Junction).	2 10										
			Woolferton Junction.	Tenbury -	—	5 4									
			Shrewsbury (English Bridge Junction).	Shrewsbury (Abbey Foregate Junction).	0 26										
			Shrewsbury (Sutton Bridge Junction).	Cruckmeole Junction.	4 52										
			Shrewsbury (Severn Bridge Junction).	Wellington (Stafford Junction).	10 52										
			Cruckmeole Junction.	Minsterley -	—	4 43									
			Cruckmeole Junction.	Buttington -	—	11 50									
			Chester Tunnel Box.	Walton Junction	17 28										
			Chester -	Birkenhead (Woodside).	15 25										
			Hooton -	Helsby -	8 74										
			Hooton -	West Kirby -	—	12 0									
			North Pole Junction.	Kensington, Earls Court Junction.	2 28										
			Llandoverly -	Llandilo -	—	11 8									
		111 63	45 61			111 63	44 30								
LONDON AND NORTH-WESTERN AND MIDLAND.* (Ashby and Nuneaton Joint Line.)															
LONDON AND NORTH-WESTERN AND MIDLAND.* (Ashby and Nuneaton Joint Line.)	19 50	6 10	Coalville -	Shackerstone Junction.	—	6 10	—	—	-	-	-	-	-	-	-
			Moirs -	Nuneaton -	19 50										

* Inserted from the Return made by the Midland Railway Company.

OF OTHER RAILWAYS WORKED BY THEM.

the Head applicable, each Main Line or Portion of Main Line or Branch so worked.)

WORKED BY TELEGRAPH.					Single Lines of Railway (not included in the foregoing Columns), (1.) Worked under the System in which only One Engine in Steam or Two or more Engines coupled together are allowed to be upon the Single Line or portions thereof at one and the same time; or (2.) Worked under the Train Porter System; or (3.) Worked under the Train Staff System.							Length of the Portions of Company's Railway and of other Railways worked by them for Goods and Mineral Traffic only.	REMARKS.
Not on either of the foregoing Systems.					From	To	Distance of						
From	To	Dis- tance of Double Line.	Distance of Single Line.				System as above. (1.)	Train Porter System. (2.)	Train Staff System. (3.)				
			Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.					With Tickets.	With- out Ticket.			
		m. ch.	m. ch.	m. ch.			m. ch.	m. ch.	m. ch.	m. ch.	m. ch.		
					Mowbray Junction, Frizington.	Mowbray - -	-	-	-	-	0 58	Single.	
					Bigrigg Junction -	Pallafat and Big- rigg.	-	-	-	-	2 1	"	
					Moor Row, Cross- field Junction.	Cleator Moor, Birks Bridge.	-	-	-	-	1 1	"	
					Distington -	Ullock Junction -	-	-	-	-	4 32	"	
					Gilfoot Branch -	-	-	-	-	-	0 57	"	
					Eden Valley Branch -	-	-	-	-	-	0 40	"	
					Eskett Branch -	-	-	-	-	-	0 25	"	
					London and North-Western and Brecon and Merthyr Joint— Rhydycar - -	Taff Vale Junction (Merthyr).	-	-	-	-	0 51		
							4 75	-	1 34	-	150 8		
					Ludlou - -	Clee Hill - -	-	-	-	-	6 0	* Worked by telegraph.	
					Dinmore (North end of Tunnel).	Dinmore Station -	*0 67	-	-	-		† Double line and worked on the absolute block telegraph system.	
					Birkenhead (Green Lane Junction).	Birkenhead (Monks Ferry).	-	-	-	0 44		‡ Worked by gong com- munication.	
					Birkenhead (Green Lane Junction).	Birkenhead (Brook Street Junction).	-	-	-	-	†0 61		
					Birkenhead (Brook Street).	Birkenhead (Canning Street South).	-	-	-	-	†0 13	Note.—Wellington, Here- ford (goods lines), Leo- minster, Ludlow, Tenbury, Craven Arms, Shrewsbury, and Ches- ter Stations are in- cluded in the distances worked by telegraph on the "absolute block system," although ac- tually worked by "gong communication and other systems."	
					Birkenhead (Brook Street).	Birkenhead (Cathcart Street).	-	-	-	-	†0 30		
					Brymbo Junction	Coed Talon Junc- tion.	-	-	-	-	2 67		
							0 67	-	-	0 44	10 11		
							-	-	-	-	-		

RAILWAY COMPANY.	Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, OR (Where the System is not continuous, enter separately one under the other, under									
			WORKED BY TELEGRAPH - - - - -									
			On the Absolute Block System.						On the Permissive Block System.			
			From	To	Dis- tance of Double Line.	Distance of Single Line.			From	To	Dis- tance of Double Line.	
						Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.	Worked on Elec- trical Train Staff or Tablet System.				
Con- sisting of Two or more Lines of Rails.	Con- sisting of a Single Line of Rails only.											
ENGLAND AND WALES—continued.												
LONDON AND SOUTH-WESTERN.	m. ch.	m. ch.			m. ch.	m. ch.	m. ch.	m. ch.			m. ch.	
	599 35	223 71	Waterloo - -	Southampton -	78 60	—	—	—	-	-	—	
			Southampton -	Dorchester -	62 20							
			Dorchester -	Weymouth -	7 0							
			Ringwood -	Bournemouth -	—	12 0						
			Worthing Junction	Salisbury -	32 40							
			Salisbury -	Yeovil -	39 20							
			Yeovil -	Exeter -	50 20							
			Sidmouth Junction	Sidmouth -	—	8 20						
			Cowley Junction	Crediton -	5 40							
			Queen Street -	St. Davids -	0 40							
			Crediton -	Torrington -	6 60	39 40						
			Barnstaple -	Braunton -	—	5 60						
			Braunton -	Morthoe -	6 0							
			Morthoe -	Ilfracombe -	—	3 0						
			Yeoford -	Lidford -	24 20							
			Woking -	Godalming -	10 0							
			Godalming -	Havant -	32 0							
			Pirbright Junction	Farnham Junction	7 40							
			Farnham -	Ash -	1 0	3 20						
			Ash -	Guildford -	5 60							
			Staines -	Wokingham -	17 40							
			Wokingham -	Reading -	7 0							
			Staines Curve	-	0 20							
			Farnham -	Winchester Junction.	—	—	25 40					
			Waterloo -	Windsor -	25 0							
			Weybridge -	Virginia Water -	5 60							
			Kensington -	Richmond -	6 0							
			Gunnersbury -	Acton Junction -	0 41							
			Bollo Junction -	Acton Lane Junction.	0 28							
			Bishopstoke -	Gosport -	16 0							
			Gosport -	Stokes Bay -	1 67							
			Fareham -	Portsmouth -	10 20							
			Andover Junction	Redbridge -	20 40							
			Poole Junction -	Poole -	3 40							
			Poole -	Bournemouth -	3 60							
			Bishopstoke -	Salisbury -	23 20							
			Alderbury Junction.	West Moors -	—	—	—	22 0				
			Portsmouth -	Waterside Extension.	1 4							
			Fulwell -	Shepperton -	6 0							
		Lymington Junction.	Lymington Pier -	—	6 0							
		St. Deny's -	Fareham -	—	11 60							
		Seaton Junction -	Seaton -	—	4 20							
		Exmouth Junction	Exmouth -	—	9 0							
		Chard Junction -	Chard -	—	3 0							
		Petersfield -	Midhurst -	—	—	9 20						
		Botley -	Bishop's Waltham	—	—	3 70						
		Joint Cornwall Railway.	Devonport -	0 60								
		Ascot Junction -	Frimley -	—	8 71							
		Frimley Junction	North Camp -	—	2 21							

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	Con- sisting of Two or more Lines of Rails.	Con- sisting of a Single Line of Rails only.	WORKED BY TELEGRAPH - - - - -									
			On the Absolute Block System.						On the Permissive Block System.			
			From	To	Dis- tance of Double Line.	Distance of Single Line.	Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.	Worked on Elec- trical Train Staff or Tablet System.	From	To	Dis- tance of Double Line.
ENGLAND AND WALES—continued.												
LONDON AND SOUTH-WESTERN—continued.	m. ch.	m. ch.	Frimley - -	Start Junction -	m. ch. 1 14	m. ch.	m. ch.	m. ch.				m. ch.
			Meldon Junction	Holsworthy - -	—	17 54						
			Ryde, St. John's -	Pier Head - -	1 11							
			Whitton Junction	Hounslow Junction.	0 30							
			Raynes Park -	Leatherhead -	9 40							
			Hampton Court Junction.	Hampton Court -	1 40							
			Wimbledon -	Twickenham -	8 20							
			Wimbledon -	Streatham (in- cluding Loop).	5 60							
			Barnes - -	Feltham (via Loop).	8 60							
			Worret Junction	Swanage - -	—	9 71						
			Halwill Junction	Launceston -	—	13 60						
			Boscarne Junction	Wadebridge -	—	5 4						
			Hampton Court Junction.	Guildford - -	16 44							
			Leatherhead -	Effingham Junction.	4 5							
			Farnboro' Junction	Frimley Junction	0 26							
			Brockenhurst -	Christchurch -	10 20							
			Bournemouth, E.	Bournemouth -	2 45							
			Hamworthy Junction.	Hamworthy -	0 60							
			Fullerton - -	Hurstbourne -	7 20							
			East Putney -	Wimbledon -	2 60							
					590 35	163 21	38 50	22 0				
LONDON, BRIGHTON, AND SOUTH COAST.	340 0	121 20	- -	The whole line - -	340 0	121 20	—	—	- -	- -	- -	—
LONDON, CHATHAM, AND DOVER.	175 7	10 22	London - -	Dover, Ramsgate, Sheerness, and Chatham Dockyard.	120 10	10 6	0 17*	—	- -	- -	- -	—
			Peckham and Loughboro Loop.	Crystal Palace -	4 58							
			Nunhead - -	Greenwich -	2 24							
			Swanley Junction	Sevenoaks - -	9 11							
			Otford Junction -	Maidstone - -	15 20							
			Maidstone -	Ashford - -	18 57							
Dover and Deal Joint Line, see page 14.			Fawkham Junction.	Gravesend -	4 67							
					175 7	10 6	0 17					
LONDONDERRY -	6 0	—	- -	- -	—	—	—	—	- -	- -	- -	—
LONDON, TILBURY, AND SOUTHEND.	64 21	3 67	Gas Factory Junction.	Shoeburyness -	42 74	—	—	—	- -	- -	- -	—
			Barking West Junction.	Forest Gate Junction.	1 43							
			North Woolwich Loop -	-	0 23							
			Tilbury Loop -	-	0 26							
			Barking East Junction.	Pitsea - -	18 79							
					64 5							
MACCLESFIELD COMMITTEE.	10 42	—	Marple Junction -	Macclesfield -	10 42	—	—	—	- -	- -	- -	—
MANCHESTER AND MILFORD.	—	41 43	- -	- -	—	—	—	—	- -	- -	- -	—

OF OTHER RAILWAYS WORKED BY THEM.

the Head applicable, each Main Line or Portion of Main Line or Branch Line so worked.)

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Not on either of the foregoing Systems.					From	To	Distance of						
From	To	Dis- tance of Double Line.	Distance of Single Line.				System as above. (1.)	Train Porter System. (2.)	Train Staff System. (3.)				
			Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.					With Tickets.	With- out Ticket.			
		m. ch.	m. ch.	m. ch.			m. ch.	m. ch.	m. ch.	m. ch.	m. ch.		
-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	1 20	Faversham to Faversham Creek. * This section is at Dover, and trains are worked on it by telegraph signals and hand sig- nals combined.	
-	-	-	-	-	-	-	-	-	-	-	1 0	Single line.	
Stanford- le-Hope Junction.	Thames Haven.	0 16	3 67	-	-	-	-	-	-	-	0 25	Whitechapel Branch. Goods	
		0 16	3 67										
-	-	-	-	-	-	-	-	-	-	-	0 32	Branch to Goods Station, Macclesfield.	
-	-	-	-	-	Pencader	Aberystwith	-	-	41 43	-	-		

MAWDDWY	.	-	\$ 80	.	.	.	.	.	.	-	-	-	-	.	.	.	.	.	.	-
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OTHER RAILWAYS WORKED BY THEM.

When applicable, each Main Line or Portion of Main Line or Branch Line so worked.)

WORKED BY TELEGRAPH.

Not on either of the foregoing Systems.

Single Lines of Railway (not included in the foregoing Columns),
(1.) Worked under the System in which only One Engine in Steam
or Two or more Engines coupled together are allowed to be
upon the Single Line or portions thereof at one and the same time; or
(2.) Worked under the Train Porter System; or
(3.) Worked under the Train Staff System.

(2.) Worked under the Train Porter System; or (3.) Worked under the Train Staff System.													REMARKS.
From	To	Distance of Double Line.	Distance of Single Line.		From	To	Distance of				Length of the Portions of and of other Railways Goods and Mineral Traffic		
			Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.			System as above. (1.)	Train Porter System. (2.)	Train Staff System. (3.)				
									With Tickets.	With- out Ticket.			
Esley	Pindar Oaks.	m. ch. 0 60	m. ch. —	m. ch. —	New Holland	Barton	m. ch. —	m. ch. —	m. ch. 3 40	m. ch. —		m. ch. 46 68	Guide Bridge, Sheffield Nos. 3 to 8 Boxes, and Retford Yards worked on Station-yard work- ing system.
Wham	Lincoln	24 75										Not worked on any of the foregoing systems. double m. ch. Beighton Branch - 1 33 New Holland Tri- angle (one side) - 0 10 Retford Curve - 0 43 2 6	
shy, Gate.	Garden Street.	0 56											
corpes ction.	Fish Dock Branch Junction.												
		26 31					—	—	3 40	—	46 68		
		—	—	—			—	—	—	—	—		
		—	—	—	Aspatia	Aikbank Junction	—	—	7 21	—	1 5	* Worked by time inter- vals under protection of signals 27 miles.	
					Bullgill	Brigham	—	—	6 13	—			
									13 34				
		—	—	—	Dinas Mawddwy	Cemmes Road	6 60	—	—	—	—		

RAILWAY COMPANY.	Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, C									
			(Where the System is not continuous, enter separately one under the other, un									
			WORKED BY TELEGRAPH									
			On the Absolute Block System.					On the Permissive Block System.				
	Consisting of Two or more Lines of Rails.	Consisting of a Single Line of Rails only.	From	To	Distance of Double Line.	Distance of Single Line.			From	To	Distance of Double Line.	
Worked by the Train Staff System in addition,						Worked without the Train Staff System.	Worked on Electrical Train Staff or Tablet System.					
ENGLAND AND WALES—continued.												
MERSEY	m. ch. 3 22	m. ch. —	Liverpool (James Street). Hamilton Square	Green Lane Birkenhead Park	m. ch. 2 11 1 11 3 22	m. ch. —	m. ch. —	m. ch. —	—	—	—	m.
METHLEY JOINT. (See GREAT NORTHERN RAILWAY.												
METROPOLITAN	31 24	4 4	Aldgate Baker Street Chalfont Road Junction. Moorgate Street	High Street, Kensington. Chalfont Road Junction. Chesham Midland Junction, King's Cross.	7 10 21 68 — 2 26 31 24	—	—	— 4 4 4 4	—	—	—	—
METROPOLITAN DISTRICT.	0 11½	—	Whitechapel Station (D.R.)	Line A.B. (See D.R. Act, 1884).	0 11½	—	—	—	—	—	—	—
METROPOLITAN AND DISTRICT JOINT.	2 3	—	Line A.B. St. Mary's Junction. St. Mary's Junction. Aldgate East Junction. Aldgate East Junction. Minories Junction. Minories Junction	St. Mary's Junction. Whitechapel Junction (London Hospital Line). Aldgate East Junction. End of Joint Property (N. Curve). Minories Junction End of Joint Property (Aldgate Station). End of Joint Property (East of Mansion House).	0 4½ 0 22½ 0 38½ 0 14 0 8½ 0 3½ 1 3½	—	—	—	—	—	—	
METROPOLITAN DISTRICT.	4 3½	—	End of M. & D. R.'s Eastern Joint, Mansion House.	Commencement of M. & D. R.'s Western Joint, 6'315 ch. West of South Kensington Junction.	4 3½	—	—	—	—	—	—	—
METROPOLITAN AND DISTRICT JOINT.	1 11½	—	Commencement of M. & D. R.'s Western Joint, South Kensington.	End of M. & D. R.'s Western Joint, 77 links North of High Street Station Platform.	1 11½	—	—	—	—	—	—	—
METROPOLITAN DISTRICT.	12 43½	1 43½	High Street Junction. Commencement of D. R., Gloucester Road. B. Box Junction. Warwick Road Junction. Hammersmith Junction. Turnham Green Junction. Ealing Loop Junction Mill Hill Park Lampton Junction.	Knaresborough Road Junction. Putney A. Box Junction Studland Road Junction. Earl's Court Junction. Ealing Ealing with G.W.R. Lampton Junction. Hounslow Barracks.	0 43 2 40½ 0 12 1 60½ 0 23 2 74½ 0 8½ 4 15½ — 1 43½	—	—	—	—	—	—	
	19 72½	1 43½			19 72½	1 43½						

OTHER RAILWAYS WORKED BY THEM.

Head applicable, each Main Line or Portion of Main Line or Branch Line so worked.)

WORKED BY TELEGRAPH.					Single Lines of Railway (not included in the foregoing Columns), (1.) Worked under the System in which only One Engine in Steam or Two or more Engines coupled together are allowed to be upon the Single Line or portions thereof at one and the same time; or (2.) Worked under the Train Porter System; or (3.) Worked under the Train Staff System.							REMARKS.
Not on either of the foregoing Systems.					From	To	Distance of				Length of the Portions of Company's Line and of other Railways worked by them for Goods and Mineral Traffic only.	
From	To	Dis- tance of Double Line.	Distance of Single Line.				System as above. (1.)	Train Porter System. (2.)	Train Staff System. (3.)			
			Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.					With Tickets.	With- out Ticket.		
m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.		
-	-	-	-	-	-	-	-	-	-	-	A length of 23 chains of the Company's line beyond Green Lane Station is not yet used, although passed by the Board of Trade, for passenger traffic. When it is so used the absolute block system will be in force, full provision having been made.	
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RAILWAY COMPANY.		Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, OR (Where the System is not continuous, enter separately one under the other, under)											
				WORKED BY TELEGRAPH - - - - -											
				On the Absolute Block System.						On the Permissive Block System.					
				From	To	Distance of Double Line.	Distance of Single Line.			From	To	Distance of Double Line.			
Worked by the Train Staff System in addition.	Worked without the Train Staff System.	Worked on Electrical Train Staff or Tablet System.													
ENGLAND AND WALES—continued.															
MIDLAND	m. ch. 977 13	m. ch. 175 78	Carlisle	St. Pancras	m. ch.	m. ch.	m. ch.	m. ch.							m. ch.
			via Sheffield.												
			With the following exceptions:—												
			At Normanton		m. ch. 0 32										
			„ Sheffield		0 27										
			„ Trent		0 19										
			„ Leicester		0 27										
			Total		1 25	307 3½									
			Appleby North Curve		0 33										
			Hawes Branch		—	5 65									
			Morecambe	Settle Junction	28 64										
			Ingleton	Clapham	4 15										
			Colne	Skipton Junction	10 70										
			Skipton Junction	Ilkley Junction	11 61										
			Keighley Station Junction.	Single Line Junction.	0 63										
			Bradford	Shipley (Leeds and Bingley Jns.).	3 5										
			Guiseley Junction, Shipley.	Esholt Junction, Guiseley.	3 39										
			Apperley Junction	Burley and Milnerwood Jn.	6 56										
			Leeds Junction, Leeds.	Whitehall and Water Lane Jns.	0 33										
			Cudworth, North and South Jns.	Barnsley	4 1										
			Masboro' South Curve		0 23										
			Holmes	Rotherham	0 71										
			Masboro'	Tapton Junction	15 12										
			Staveley Junction	Elmton and Creswell Junction.	—	—	—	8 14							
			Clay Cross	Trent, North Jn., South Jn., and Trent Jn., via Chaddesden Sidings.	30 12										
			Tibshelf South Junction.	Pleasley Junction	3 19	4 41	—	1 17							
			North Junction, Ambergate.	Station Junction, Ambergate.	0 23										
			Ambergate, North and South Jns.	Buxton and New Mills.	39 74										
			Throstle Nest Junction.	Heaton Mersey Junction.	6 18										
			Ancoats Junction	Junction with L. and Y. Line.	0 45										
			Little Eaton Junction.	Ripley	0 18	—	—	6 72							
			Derby Junction, Derby.	Derby South and North Jns.	0 46										
			Derby	Bristol	128 42										
			Sheet Stores and Trent.	Melbourne Jn., Derby, and Stenson Jn.	15 55										
			Worthington	Burton Road, Ashby.	—	4 78									
			Whitacre	London and North-Western Junction, Nuneaton.	21 34										
			Water Orton and Castle Bromwich Junction.	North Walsall and Ryecroft Junctions.	13 75										
			Walsall Wood Branch.		3 73										
			Walsall	Wolverhampton	6 35										
			Branch to G.W.R. at Wolverhampton.		0 40										
			Saltley	Derby Junction	1 0										
			St. Andrew's Junction.	Garrison Lane Junction.	0 20										
			Birmingham West	Suburban Branch.	5 26										
			Barnt Green	Evesham	—	22 5									
			Hereford	Three Cocks	0 32	25 16									
			Harbour Branch Sidings, Swansea.	Brynammon (via Morriston).	—	18 26									
			Aschurch	Tewkesbury	1 29										

OF OTHER RAILWAYS WORKED BY THEM.

the Head applicable, each Main Line or Portion of Main Line or Branch Line so worked.)

WORKED BY TELEGRAPH.					Single Lines of Railway (not included in the foregoing Columns), (1.) Worked under the System in which only One Engine in Steam or Two or more Engines coupled together are allowed to be upon the Single Line or portions thereof at one and the same time; or (2.) Worked under the Train Porter System; or (3.) Worked under the Train Staff System.					Length of the Portions of Company's Railways worked by the and of other Railways worked by the Goods and Mineral Traffic only.		REMARKS.
Not on either of the foregoing Systems.												
From	To	Distance of Double Line.	Distance of Single Line.	Worked by the Train Staff System in addition.	From	To	System as above. (1.)	Train Porter System. (2.)	Train Staff System. (3.)	With Tickets.	Without Ticket.	
Lancaster	Castle Station, Lancaster	m. ch.	m. ch.	m. ch.	Hazlewood -	Wirksworth -	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	
	Duffield Junction.	—	0 41		Melbourne -	Worthington -	—	—	6 40			
Hazlewood	—	—	1 75		Desford Junction	West Bridge -	—	—	3 59			
Chellaston	Melbourne	1 54			Coleshill -	Hampton -	—	—	—	6 0	0 28	Petterill Goods Station
East Jn. Whitacre	Coleshill -	—	3 4		Stroud Branch	—	—	—	—	4 43	0 40	Morecambe Pier to Station.
Ashohurch	Beckford	2 49			Dudbridge Junction.	Nailsworth -	—	—	—	3 10	0 40	St. Mary's Junction, Derby, to St. Mary's Wharf.
Between Signal Posts at—					Coaley Junction	Dursley -	—	—	—	2 47	0 20	Leeds and Liverpool Canal Co.'s Siding, Embsay.
Leeds -	—	0 19			Yate -	Thornbury -	—	—	—	7 37	0 37	Hunslet Lane Station to Hunslet Junction.
Normanton -	—	0 32			Hemel Hempstead Branch	—	—	—	—	8 64	0 18	Hunslet Waggon Works Branch.
Barnsley -	—	0 25			Mansfield -	Rolleston Junction	—	—	14 57		0 18	Monkbridge Ironworks Branch.
Sheffield -	—	0 27									5 2	Snydale Branches.
Derby -	—	0 35									0 62	Nunnery Colliery Branch.
Ashby -	—	0 38									0 45	Williamthorpe Branch.
Trent -	—	0 19									0 18	Clay Cross South Junction towards No. 4 Pit (part of Williamthorpe Branch).
Peterboro'	—	1 0			Swansea Passenger Station.	Harbour Branch	—	0 32			0 73	Beighton Curve.
Leicester -	—	0 27			Single Line Junction, Keighley.	Sidings. Oxenhope -	—	—		4 9	1 24	Springwell Branch.
Knighton -	—	0 27									0 45	Speedwell Branch.
Bedford -	—	0 31									0 61	Seymour Branch.
											5 20	Doe Lea Branch.
											0 78	Goods Junction, Staveley Hall Lane Junction.
											1 28	Killamarsh Branch.
											2 2	Killamarsh Branch Extension.
											0 23	Swinton Ironworks Branch.
											1 1	Shirland Branch.
											4 1	Avenue Crossing Jn. with Holmwood Bch.
											0 72	Holmwood Branch.
											0 13	Lings Colliery Branch, North Curve.
											0 11	Lings Colliery Branch, South Curve.
											1 27	Brampton Branch.
											0 15	Chesterfield Gas Works Branch.
											1 74	South Jn. with Main Line to Cobnar Wood Jn.
											1 13	Cobnar Wood Junction to Monkwood Colliery.
											1 36	Cobnar Wood Junction to Nesfield Colliery.
											0 17	North Junction Curve with Main Line.
											0 33	Branch to Chesterfield Canal.
											2 12	Dronfield Junction to Unston Sidings, Unston.
											0 16	Darfield East Junction to Mount Osborne East Junction.
											1 28	Sheffield (Wicker) to Grimesthorpe Jn.

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			WORKED BY TELEGRAPH - - - - -									
			On the Absolute Block System.					On the Permissive Block System.				
			From	To	Distance of Double Line.	Distance of Single Line.			From	To	Distance of Double Line.	
	Consisting of Two or more Lines of Rails.	Consisting of a Single Line of Rails only.				Worked by the Train Staff System in addition.	Worked without the Train Staff System.	Worked on Electrical Train Staff or Tablet System.				
ENGLAND AND WALES—continued.												
MIDLAND—continued -	m. ch.	m. ch.	Malvern Sidings -	Malvern Junction	m. ch. 0 20	m. ch.	m. ch.	m. ch.				m. ch.
			Stonehouse -	Dudbridge Junction.	—	2 53						
			Berkeley Road Junction.	Sharpness -	4 3							
			North and South Junction, Mangotsfield.	Bath -	10 45							
			Kingswood Junction.	Ashley Hill Junction.	1 48							
			Clifton South Junction.	Junction with Bristol and Birmingham Line.	0 18							
			Lawrence Hill Junction.	St. Philip's Station, Bristol.	—	0 42						
			Kirkby Junction	Pye Bridge -	5 6							
			Mansfield and Lenton South Junctions, Nottingham.	Shireoaks and Worksop Junction.	39 74							
			Ambergate, Crich Junction.	Codnor Park and Riddings Junction.	6 6							
			Bennerley Junction.	Basford Junction	5 26							
			Ilkeston West Junction.	Ilkeston -	—	0 65						
			Ilkeston West Junction.	North Junction -	0 40							
			Basford Junction	Trowell Junction	4 77							
			Trent South and North Erewash Junction.	Nottingham -	6 77							
			Nottingham -	Lincoln -	32 64							
			Nottingham -	Melton -	17 34							
			Syston, North and South Junctions.	Wisbech Junction, Peterborough.	47 0							
			Great Eastern Junction, Peterborough.	Great Northern Junction, Crescent Crossing.	0 60							
			Manton Junction	Glendon South Junction.	15 56							
			London Road Junction, Derby.	Spondon Junction.	1 73							
			Knighton, North Junction.	Leicester Junction, Burton.	29 26							
			Swadlincote -	Woodville -	—	7 3						
			Wigston, North Junction.	Rugby -	16 70							
			Wigston, South Junction.	Glen Parva Junction.	0 47							
			Midland Junction, Wellingboro'.	L. & N. W. Junction, Wellingborough.	0 60							
			Oakley Junction -	Northampton -	20 8							
			Southill -	L. & N. W. Junction, Bedford.	6 66							
			Child's Hill Junction and Brent South Junction, Kentish Town Junction.	Acton Wells Junction.	4 63							
			Paul's Road Junction.	Highgate Road -	0 44							
				King's Cross Junction.	1 1							
									Worked on time interval system.			
									Beckford -	Evesham -	7 0	
									Tewkesbury -	Malvern Sidings.	11 42	
									Southill -	Hitchin -	8 60	
	977 13	176 78			941 8	91 74	—	16 23				27 22
			Lines worked :—									
	5 0	33 21	Kettering Junction.	Huntingdon -	—	25 64						
			Gospel Oak -	Tottenham North Junction.	4 55							
			Halesowen Branch -	" -	0 25	5 51						
					5 0	31 35						

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			WORKED BY TELEGRAPH - - - - -									
			On the Absolute Block System.						On the Permissive Block System.			
			From	To	Dis- tance of Double Line.	Distance of Single Line.			From	To	Dis- tance of Double Line.	
Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.	Worked on Elec- trical Train Staff or Tablet System.										
ENGLAND AND WALES—continued.												
MIDLAND—continued.	m. ch.	m. ch.	Joint Lines.		m. ch.	m. ch.	m. ch.	m. ch.				m. ch.
	41 12	38 8	Hawes Joint Station	- - -	0 29							
			Carnforth South Curve	- - -	0 20							
			Wennington	- Carnforth	9 48							
			Hyde Junction	- Hayfield	9 50	2 16						
			Hough Green	- Widnes East Jn. via Widnes.	5 2							
			Romiley Junction	- Ashburys Junction	5 77							
			Romiley Junction	- Bredbury Junction	1 24							
			Brinnington Junction.	- Reddish Junction	1 22							
			Worcester Joint Station	- -	0 77							
			Malvern Wells Junction.	- Malvern Link	1 51							
			Sharpness Joint Station	- -	0 15							
			Clifton Extension	- - -	3 24							
			Peterboro' - -	- Sutton Bridge	-	26 57						
			Sutton Bridge Junction.	- Junction with G.E. Line at Lynn.	0 40	9 15						
Exclusive of Otley and Swinton and Knottingley Joint Lines. See below.					39 79	38 8						
Ashby and Nuneaton. See page 34.												
Total	1,023 25	247 27			986 7	161 37	-	16 23	Time interval system— 27 m. 22 ch.			
MIDLAND AND NORTH-EASTERN JOINT LINES.†	25 48	-	Swinton - -	- Knottingley	19 35							
			Otley - - -	- Ilkley	6 13							
					25 48							
MIDLAND AND SOUTH - WESTERN JUNCTION.	0 60	41 49	Cirencester - -	- Marlborough Station.	-	26 17						
			Marlborough Station.	- Marlborough Jn. with G.W.R.	0 27							
			Wolfhall Junction	- Andover Junction Station.	-	15 32						
			Swindon Junction with G.W.R.	- Rushey Platt Junction.	0 33							
					0 60	41 49						
NEATH AND BRECON:—	-	40 22	Brecon - -	- Ynisiygeinon Junction.	-	29 7	-	-	-	-	-	-
Neath Branch - -	-	-	Neath - -	- Colbren Junction	-	11 15						
					-	40 22						

OF OTHER RAILWAYS WORKED BY THEM.

The Head applicable, each Main Line or Portion of Main Line or Branch Line so worked.)

WORKED BY TELEGRAPH.					Single Lines of Railway not included in the foregoing Columns), (1.) Worked under the System in which only One Engine in Steam or Two or more Engines coupled together and allowed to be upon the Single Line or portions thereof at one and the same time; or (2.) Worked under the Train Porter System; or (3.) Worked under the Train Staff System.					Length of the Portions of Company's Railway and of other Railways worked by them for Goods and Mineral Traffic only.	REMARKS.	
Not on either of the foregoing Systems.					From	To	Distance of					
From	To	Dis- tance of Double Line.	Distance of Single Line.				System as above. (1.)	Train Porter System. (2.)	Train Staff System. (3.)			
			Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.					With Tickets.			With- out Ticket.
		m. ch.	m. ch.	m. ch.			m. ch.	m. ch.	m. ch.	m. ch.		
Bristol Joint Station •		1 13									0 47	Goods Lines. Branch to Avonmouth Docks.
											1 36	Between Moor Lane Junction and junction with Hutchinson's Line, Widnes.
											0 27	Branch to junction with Hutchinson's Line.
											0 61	Wisbech Dock Line Junction with Main Line to Market Place.
											0 14	Wisbech Loop Line.
											1 26	Landowners' Branch, Widnes.
											0 42	Newark Curve.
											0 29	Donisthorpe Colliery Branch.
											0 52	G. and S. W. and Mid- land Dentonholm Goods Yard.
											0 24	Connecting line, Six Pit Junction.
											6 38	
												Unused Lines.
											0 37	Widnes Junction South to Widnes Junction West.
											3 12	Stoke Golding Junction to Hinckley Junction.
											0 67	Wath Curve.
										0 23	Branch to Quarry at Hough Green.	
										4 59		
		1 13	—	—			—	—	—	—		
		9 76	4 40	—			—	0 32	24 76	39 59	142 23	
											13 47	Unused lines.
												† Extracted from the statement of the Mid- land Railway Com- pany's Joint Lines, and the North-Eastern Railway Company's Return.
											1 63	Maesymarehogg Colliery Branch, worked on System No. 1.

RAILWAY COMPANY.	Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, OR (Where the System is not continuous, enter separately one under the other, under)									
			WORKED BY TELEGRAPH - - - - -									
			On the Absolute Block System.						On the Permissive Block System.			
			From	To	Dis- tance of Double Line.	Distance of Single Line.			From	To	Dis- tance of Double Line.	
	Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.				Worked on Elec- trical Train Staff or Tablet System.						
m. ch.	m. ch.											
ENGLAND AND WALES—continued.												
NORTHAMPTON AND BANBURY.	0 49	14 37	Blisworth -	Green's Norton -	m. ch. 0 36	m. ch. 4 58	m. ch. —	m. ch. —	-	-	-	m. ch. —
NORTH AND SOUTH-WESTERN JUNC- TION.	3 14	1 46	Old Oak Junction	Kew Bridge -	3 14	—	—	—	-	-	-	—
			South Acton -	Hammersmith Junction.	—	—	0 23*	-	-	-	-	
			Hammersmith Station.	Hammersmith Junction.	—	1 23	-	-	-	-	-	
					3 14	1 23	0 23	-	-	-	-	
NORTH-EASTERN	927 41	458 55	Berwick -	Manor Station, Newcastle.	65 79	—	—	—	-	-	-	—
			Tweedmouth Junction.	Sprouston Junction.	21 7							
			Gateshead, High Street.	Gateshead Junction.	0 13							
			Park Lane Junction, Gateshead.	York -	78 69							
			Coldstream Junction.	Alnwick Junction	0 44	34 74						
			Alnwick Junction	Alnwick -	2 69	—	0 17					
			Amble Branch Junction.	Amble Station -	—	4 73						
			Scotswood, West Junction.	Bishop Auckland	21 10	13 43						
			Baxter Wood Junction.	Bridge House Junction.	0 52							
			Pelaw Junction -	South Shields, New Station.	7 11							
			Pelaw Junction -	Sunderland, New Station.	8 37							
			Sunderland New Station.	Penshaw Junction	5 75							
			Sunderland Junction.	Ryhope Grange Junction.	1 63							
			Forth Goods Junction.	Carlisle Junction	59 6							
			Haltwhistle Junction.	Alston -	—	13 0						
			Heaton Junction	Tynemouth -	6 33							
			Byker Junction -	Percy Main -	6 43							
			Primrose Hill, Stockton.	Stranton Lane, W. Hartlepool.	11 14							
			Norton, East Junction.	Norton, West Junction.	0 28							
			Norton, South Junction.	Ferryhill -	11 10							
			Billingham Junction.	Port Clarence Junction.	3 0							
			Cleaton Junction	Harton Junction	1 64							
			Murton Junction	Shincliffe D. & S.	—	7 57						
			Gateshead Junction.	Ferryhill -	22 71							
			Ferryhill -	Hartlepool -	16 29							
			Clarence Junction, W. Hartlepool.	East Hartlepool Junction.	1 53							
			Cemetery Junction West.	Cemetery Junc., N. Hartlepool.	0 35							
			Ryhope Grange Junction.	Castle Eden, North Junction.	12 3							
			Castle Eden, N. Junction.	Carlton, North Junction.	9 70							
			Carlton, North Junction.	Carlton, East Junction.	0 37							
			Byers Green Junction.	Burnhouse Junction.	4 32							
			Burnhouse Junction.	Bishop Auckland, East Junction.	—	3 51						
			Byers Green Junction.	Cornforth Lane -	1 14							
			Auckland Junction.	Durham, East Cabin.	3 64							
			Dearness Junction	Hedley Hill -	1 78	3 55						
			Dalton Junction -	Richmond -	9 74							
			York -	Scarborough -	41 48							
			Malton, E. Cabin	Driffeld, West Junction.	0 20	19 2						
			Sessay Wood Junction.	Sunbeck Junction	0 31							
			Bishop House Junction.	Sanbeck Junction	0 36							

OF OTHER RAILWAYS WORKED BY THEM.

The Head applicable, each Main Line or Portion of Main Line or Branch Line so worked.)

WORKED BY TELEGRAPH.					Single Lines of Railway (not included in the foregoing Columns), (1.) Worked under the System in which only One Engine in Steam or Two or more Engines coupled together are allowed to be upon the Single Line or portions thereof at one and the same time; or (2.) Worked under the Train Porter System; or (3.) Worked under the Train Staff System.							REMARKS.	
Not on either of the foregoing Systems. †					From	To	Distance of						Length of the Portions of Company's Railways worked by the and of other Railways worked by the Goods and Mineral Traffic only.
From	To	Dis- tance of Double Line.	Distance of Single Line.				System as above. (1.)	Train Porter System. (2.)	Train Staff System. (3.)				
			Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.					With Tickets.	With- out Ticket.			
		m. ch.	m. ch.	m. ch.			m. ch.	m. ch.	m. ch.	m. ch.	m. ch.		
-	-	-	-	-	Green's Norton	Cockley Brake Junction.	-	-	9 72	-	-		
-	-	-	-	-	-	-	-	-	-	-	-	* This portion of single line is used by one train only, therefore a train staff is unnecessary.	
Tweedmouth, N. Cabin.	Tweedmouth, S. Cabin.	0 14	-	-	Hexham Junction	Catton Road	12 16	-	-	-	179 0		
Newcastle Manors.	Newcastle Central Station.	0 42			Cornforth Lane	Coxhoe	0 65						
Wateshead, Team Valley.	Newcastle, Forth Goods Jn.	1 12			Tebay Station	Tebay Yard	0 26						
Wateshead, High St.	Park Lane Jn.	0 33											
Port Clarence Jn.	Port Clarence Station.	0 24											
Weldard Jn.	Armley Jn.	0 34											
Leeds New Stn., East Cabin.	Leeds New Stn., Canal Cabin.	0 29											
Lockton Jn.	Primrose Hill.	0 15											
Hartlepool W. Stn. Cabin.	Church St. Jn.	0 7											
Hartlepool W. Stn. Cabin.	Clarence Rd. Jn.	0 15											
Guisboro' Station Cabin.	Guisboro' Station.	0 12											
Harrogate N. Cabin.	Harrogate S. Cabin.	0 14											
York Stn. Cabin.	York Loco. Cabin.	0 15											
Scarboro' Station Cabin.	Falsgrave Cabin.	0 29											

RAILWAY COMPANY.	Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAY, OR (Where the System is not continuous, enter separately one under the other, under)											
			WORKED BY TELEGRAPH - - - - -											
			On the Absolute Block System.						On the Permissive Block System.					
			From	To	Dis- tance of Double Line.	Distance of Single Line.			From	To	Dis- tance of Double Line.			
Worked by the Train Staff System in addition.	Worked without the Train Staff System.	Worked on Electrical Train Staff or Tablet System.												
ENGLAND AND WALES--continued.														
NORTH - EASTERN-- continued.	m. ch.	m. ch.	Sunbeck Junction	Scarboro' Road, Junc., Malton. (Less Gilling and Hemsley Bnch.).	m. ch. —	m. ch. 19 35	m. ch.	m. ch.					m. ch.	
			Rillington - -	Whitby - -	30 47									
			Mill Lane, Junt., Pickering.	Seamer Junction	0 75	15 6								
			Grosmont Junc- tion.	Picton Junction -	11 68	17 63								
			Nunthorpe Junc- tion.	Battersby Junc- tion.	—	5 10								
			York - -	Altofts Junction -	23 12									
			Methley Junction	Whitwood Junc- tion.	0 50									
			Burton Salmon Junction.	Knottingley Junc- tion.	2 68									
			Chandlers Whin Cabin.	Shaftolme Junc- tion.	26 34									
			Joan Croft Junc- tion.	Applehurst Junc- tion.	0 48									
			Thorne - -	Staddlethorpe Junction.	14 0									
			Potter's Grange Junction.	Goole, L. and Y. Junction.	0 60									
			Milford Junction Station.	Gascoigne Wood Junction.	1 29									
			Gascoigne Wood Junction.	Sherburn Junc- tion.	1 16									
			Leeds New Station	Park Street, Hull	51 21									
			Cliffe Station -	Market Weighton Junction.	—	16 4								
			Armley Junction	Thirsk Junction -	37 39									
			Starbeck North Junction.	Bilton Road Junc- tion.	1 4									
			Dragon Junction, Harrogate.	Poppleton Junc- tion.	17 72									
			Starbeck South Junction.	Pannal Junction -	2 65									
			Melmerby Junc- tion.	Northallerton -	—	11 33								
			Northallerton -	North Stockton -	17 43									
			Church Fenton Junction.	Micklefield Junc- tion.	4 79									
			Cross Gates Junc- tion.	Wetherby Junc- tion.	0 44	10 23								
			Garforth Junction	Castleford Junc- tion.	0 43	5 54								
			Castleford Station	Cutsyke Junction	0 64									
			Church Fenton Junction.	Crimple Junction	16 45									
			Gilling - -	Mill Lane Junc., Pickering.	0 22	16 46								
			Ripley Junction -	Pateley Bridge -	—	11 34								
			Melmerby - -	Masham - -	—	7 42								
			Arthington - -	Otley - -	3 25									
			Arthington North Junction.	Arthington West Junction.	0 22									
			Knaresboro' Junc- tion.	Pilmoor Junction	—	13 7								
			Bootham Junction	Beverley Junction	10 22	21 18								
			Cottingham Junc- tion.	Hessle Road Junc- tion.	—	1 53								
			Anlaby Road Junction.	Botanic Gardens Junction.	0 37									
			West Parade Junction, Hull.	Southcoates Junc- tion.	2 59									
			Southcoates Junc- tion.	Withernsea -	0 26	17 19								
			Wilmington Junc- tion.	Hornsea - -	0 14	12 66								
			West Parade Junction.	Seamer Junction -	49 70									
			Driffield Junction	Driffield West Junction.	0 23									
			Northallerton High Junction.	Castle Hills Inner Junction.	—	0 43								
			Castle Hills Junc- tion.	Leyburn - -	1 54	15 43								
			Leyburn - -	Hawes - -	—	16 29								
			Clifton Station -	Clifton Junction -	0 35									
			Eamont Junction	Red Hills Junc- tion.	1 7									
			Clifton Station -	Darlington North Road.	23 58	35 58								
			Kirkby Stephen -	Tebay - -	3 44	8 0								

RAILWAY COMPANY.	Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, &c. (Where the System is not continuous, enter separately one under the other, under the heading of the System.)												
			WORKED BY TELEGRAPH												
			On the Absolute Block System.							On the Permissive Block System.					
			From	To	Distance of Double Line.	Distance of Single Line.			From	To	Distance of Double Line.				
Worked by the Train Staff System in addition.	Worked without the Train Staff System.	Worked on Electrical Train Staff or Tablet System.													
ENGLAND AND WALES—continued.															
NORTH - EASTERN— continued.	m. ch.	m. ch.	Barnard Castle -	Bishop Auckland	m. ch. 4 13	m. ch. 10 65	m. ch.	m. ch.						m. ch.	
			Tees Valley Junction.	Middleton in Teesdale.	—	7 54									
			Wilton Junction -	Stanhope -	0 31	12 34									
			Hownes Gill Junction.	West Durham Junction.	5 0	7 79									
			Hownes Gill Junction.	Consett South Junction.	—	0 25									
			West Durham Junction.	Saltburn -	44 61										
			Albert Hill Junction.	Parkgate Junction, Darlington.	0 27										
			Polam Junction -	Onk Tree Junction	3 77										
			Hartburn Junction.	Bowesfield Junction.	0 42										
			Saltburn Junction.	Loftus -	6 71	1 22									
			Guisboro' Junc., Middlesbro'.	Guisboro' Station Cabin.	9 30										
			Hutton Junction, Guisboro'.	Brotton -	6 46										
			Priestcroft Junction.	Foggo Junction -	1 15										
			Newcastle, New Bridge E. Stn.	Backworth Junction.	6 29										
			Backworth Junction.	Morpeth -	11 15	2 66									
			Bedlington Junction.	Newbiggin -	2 68	2 53									
			Newsham Junction.	Isabella Pit Junction.	0 34										
			Isabella Pit Junction.	Blyth -	0 78	0 21									
	LINE WORKED: Sprouston Junction and Kelso, Scarborough and Whitby.	1 21	—	Backworth Junction.	Monkseaton Junction.	2 44									
		—	20 58	Monkseaton Junction.	Tynemouth -	2 54									
JOINT LINES: Otley and Ilkley, and Swinton and Knottingley. See p. .			Monkseaton Junction.	Hartley Junction, Avenue Branch.	—	3 52									
			Scotswood Junction.	West Wylam Junction.	6 38										
			Loftus -	Bog Ball Junction, Whitby.	0 7	16 21									
			Prospect Hill Junc., Whitby.	Falsgrave Junc., Scarborough.	—	20 58									
	928 62	479 33	Sprouston Junction.	Kelso -	1 21										
NORTH LONDON	11 78	—	Broad Street -	Chalk Farm -	5 51	—	—	—							
			Dalston Junction.	Junction with Blackwall Line at Poplar.	4 71										
			Western Junction, Dalston.	Eastern Junction, Dalston.	0 33										
			Bow -	Junction with Great Eastern Railway at Bow Bank.	0 32										
			Bow -	Junction with Tilbury Railway at Bromley.	0 51										
					11 78										
NORTH STAFFORDSHIRE.	150 4	18 51	Macclesfield Junction.	Stoke North Box	19 46	—	—	—	Macclesfield, L. & N.W.	Macclesfield Junction.	0 1				
			Stoke South Box	Colwich, N.S.	18 21										
			Stone Junction -	Norton Bridge, N.S.	3 42										
			North Rode -	Uttoxeter Junction.	27 52										
			Rocester -	Ashbourne -	—	6 66									
			Uttoxeter North Junction.	Uttoxeter West Junction.	0 26										
			Crewe Sidings -	Harecastle Junction.	8 4										
			Stoke Junction -	Willington Junction.	29 77										
			Marston Junction	Burton Junction -	3 27										
			Congleton Upper Junction.	Heaths Junction -	—	4 40									

RAILWAY COMPANY.	Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, OR (Where the System is not continuous, enter separately one under the other, under									
			WORKED BY TELEGRAPH									
			On the Absolute Block System.						On the Permissive Block System.			
	Consisting of Two or more Lines of Rails.	Consisting of a Single Line of Rails only.	From	To	Distance of Double Line.	Distance of Single Line.			From	To	Distance of Double Line.	
						Worked by the Train Staff System in addition.	Worked without the Train Staff System.	Worked on Electrical Train Staff or Tablet System.				
ENGLAND AND WALES—continued.												
NORTH STAFFORD-SHIRE—continued.	m. ch.	m. ch.	Heaths Junction -	Stoke Junction -	m. ch. 8 6	m. ch.	m. ch.	m. ch.				m. ch.
			Cheddleton Junction.	Milton Junction -	—	6 60						
			Kidsgrove Junction.	Etruria Junction.	7 25							
			Alsager Junction	Keele Junction -	7 30							
			Newcastle Junction.	Hartshill -	0 59							
			Hartshill - -	Newcastle Station	—	0 45						
			Newcastle Station	Market Drayton Junction.	14 63							
					148 78	18 51						0 16
NORTH WALES' NARROW GAUGE.	—	11 70	-	-	—	—	—	—	-	-	-	—
OLDHAM, ASHTON, AND GUIDE BRIDGE JUNCTION.	5 64	—	Guide Bridge -	Oldham - -	5 35	—	—	—	-	-	-	—
			Canal Junction -	Audenshaw Junction.	0 29							
					5 64							
PEMBROKE AND TENBY.	—	27 34	Pembroke Dock -	Whitland -	—	27 34	—	—	-	-	-	—
PONTYPRIDD, CAERPHILLY, AND NEWPORT.	5 11	—	Pontypridd Junction.	Pearlins - -	5 11	—	—	—	-	-	-	—
RAVENGLASS AND ESKDALE.	—	7 11	-	-	—	—	—	—	-	-	-	—
RHONDDA AND SWANSEA BAY.	0 39	7 40	Port Talbot - -	Cymmer - -	—	7 40	—	—	-	-	-	—
RHYMNEY - -	15 72	16 20	Old Cardiff Station	New Station -	0 36		—	—	-	-	-	—
			Cardiff - -	Ystrad Station -	12 41							
			Ystrad Station -	Rhyrnney -	—	—	9 74					
			Walnut Tree Junction.	Nantgarw - -	1 35							
			Nantgarw -	Aber Junction -	—	—	—	2 13				
			Bargoed Junction	Deri Junction -	—	—	2 60					
			Ystrad Junction -	Penallta Junction	1 40							
			Caerphilly West Junction.	Penrhos Junction	—	1 0						
			Caerphilly East Junction.	Junction with B. and M. Railway near Caerphilly.	—	0 33						
			Merthyr - -	Merthyr - -	6 57							
Rhyrnney Joint Line. See LONDON AND NORTH-WESTERN.	6 57	—										
Merthyr Joint Lines-	22 49	16 20			22 49	1 33	12 54	2 13				

OTHER RAILWAYS WORKED BY THEM.

Head applicable, each Main Line or Portion of Main Line or Branch Line so worked.)

WORKED BY TELEGRAPH.					Single Lines of Railway (not included in the foregoing Columns), (1.) Worked under the System in which only One Engine in Steam or Two or more Engines coupled together are allowed to be upon the Single Line or portions thereof at one and the same time; or (2.) Worked under the Train Porter System; or (3.) Worked under the Train Staff System.					REMARKS.		
Not on either of the foregoing Systems.												
From	To	Dis- tance of Double Line.	Distance of Single Line.		From	To	Distance of				Length of the Portions of Company's Railway and of other Railways worked by them for Goods and Mineral Traffic only.	
			Worked by the Train Staff System in addition.	Worked without the Train Staff System.			System as above. (1.)	Train Porter System. (2.)	Train Staff System. (3.)			
								With Tickets.	With- out Ticket.			
		m. ch.	m. ch.	m. ch.	Talke Junction -	Talke -	m. ch.	m. ch.	m. ch.	m. ch.		m. ch.
					Congleton Lower Junction.	Congleton (Town)	-	-	-	-	1 0*	† Worked on system No. 1.
					Newfields Junction	Newfields -	-	-	-	-	0 60*	
					Hyatts Junction -	Grange -	-	-	-	-	1 21*	
					Frogghall Junction	Frogghall -	-	-	-	-	0 50†	
					Oakamoor Station	Oakamoor -	-	-	-	-	0 24†	
					Normacot Junction.	Botteslow Junction.	-	-	-	-	3 64†	
					Hulme Junction -	Hulme Colliery -	-	-	-	-	0 36†	
					Hanley Junction -	Hanley Goods -	-	-	-	-	0 13†	
		0 70									24 8	
		-	-	-	Dinas -	Bryngwyn -	4 50					
					Tryfan Junction -	Rhyddu -	7 20					
							11 70					
		-	-	-			-	-	-	-	0 21	Oldham Goods Branch.
		-	-	-			-	-	-	-	0 31	Dockyard Extension.
							-	-	-	-	0 51	Hobb's Point Extension.
		-	-	-			-	-	-	-	2 2	Bassaleg Junction with B. and M. and Junction with Alexandra Dock Co.
		-	-	-	Ravenglass -	Boot -	7 11	-	-	-	-	
		-	-	-			-	-	-	-	0 75	Wharf.
							-	-	-	-	0 20	New Bank.
							-	-	-	-	0 16	Plough Junction with G.W.R.
							-	-	-	-	0 26	Tew Goed Branch.
							-	-	-	-	0 7	Cymmer Junction with G.W.R.
											1 64	
		-	-	-			-	-	-	-	1 4	Dock Branch, Cardiff Station.
							-	-	-	-	0 48	Hendredenny Colliery Branch.
							-	-	-	-	0 60	New Tredegar Colliery Branch.
							-	-	-	-	0 25	Merthyr Vale Branch.
											2 57	Colliery Branches.

RAILWAY COMPANY.	Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, OR (Where the System is not continuous, enter separately one under the other, under)									
			WORKED BY TELEGRAPHIC - - - - -									
			On the Absolute Block System.							On the Permissive Block System.		
			From	To	Distance of Double Line.	Distance of Single Line.			From	To	Distance of Double Line.	
Worked by the Train Staff System in addition.	Worked without the Train Staff System.	Worked on Electrical Train Staff or Tablet System.										
ENGLAND AND WALES—continued.												
RHYMNEY AND GREAT WESTERN JOINT.	m. ch. 9 19	m. ch. —	Llancaiach - -	Dowlais - -	m. ch. 9 19	m. ch. —	m. ch. —	m. ch. —	- - - - -	- - - - -	m. ch. —	
SEACOMBE, HOYLAKE, AND DEESIDE.	4 16	6 6	Birkenhead Park	New Brighton -	4 16	—	—	—	- - - - -	- - - - -	—	
			Bidston Junction	West Kirby -	—	6 6						
					4 16	6 6						
SEVERN AND WYE AND SEVERN BRIDGE.	2 79	19 15	Sharpness West Box.	Sharpness East Box.	0 31	—	—	—	Parkend -	Coleford Junction.	0 6	
			Sharpness East Box.	Severn Bridge Station.	—	—	—	0 79				
			Severn Bridge Station	Loop -	0 16							
			Severn Bridge Station.	Lydney Junction	—	—	—	2 18				
			Junction line with G. W. Ry., Lydney		0 9							
			Lydney Junction	Lydney Town -	1 12							
			Lydney Town -	Tufts Junction -	—	—	—	1 50				
			Tufts Junction Loop	- - -	0 14							
			Tufts Junction -	Parkend - -	—	1 28						
			Coleford Junction	Drybrook Road -	—	4 38						
			Serridge Junction	Upper Lydbrook -	—	2 33						
			Upper Lydbrook Loop	- - -	0 17							
			Upper Lydbrook -	Lydbrook Junction.	—	1 59						
Coleford Junction	Coleford -	—	3 55									
					2 19	13 53	—	4 67		0 6		
SHEFFIELD MIDLAND AND COMMITTEE.	10 72	—	Reddish Junction	Ashburys Junction	3 22	—	—	—	- - - - -	- - - - -	—	
			Woodley - -	Hyde Junction -	2 48							
			Hough Green -	Widnes East -	5 2							
					10 72							
SOUTH-EASTERN - Dover and Deal Joint Line. See p. .	365 67	41 65	Throughout -	- - -	365 67	41 60	—	—	- - - - -	- - - - -	—	
SOUTH-WESTERN AND MIDLAND SOMERSET AND DORSET JOINT LINE.	20 62	76 6	Bath - - -	Radstock - -	—	—	—	10 10	- - - - -	- - - - -	—	
			Radstock - -	Binegar - -	6 33							
			Binegar - -	Shepton Mallet -	—	—	—	4 58				
			Shepton Mallet -	Templecombe -	14 29							
			Templecombe -	Wimborne -	—	—	—	27 41				
			Bailey Gate -	Broadstone -	—	—	—	4 42				
			Evercreech Junction.	West Pennard -	—	5 9						
			West Pennard -	Glastonbury -	—	—	—	5 22				
			Glastonbury -	Burnham - -	—	13 38						
			Glastonbury -	Wells - - -	—	5 26						
				20 62	23 73	—	52 13					
SOUTHWOLD -	—	9 0	- - -	- - -	—	—	—	—	- - - - -	- - - - -	—	
SWANSEA AND MUMBLES.	—	5 10	- - -	- - -	—	—	—	—	- - - - -	- - - - -	—	

OF OTHER RAILWAYS WORKED BY THEM.

The Head applicable, each Main Line or Portion of Main Line or Branch Line so worked.)

- WORKED BY TELEGRAPH.					Single Lines of Railway (not included in the foregoing Columns), (1.) Worked under the System in which only One Engine in Steam or Two or more Engines coupled together are allowed to be upon the Single Line or portions thereof at one and the same time; or (2.) Worked under the Train Porter System; or (3.) Worked under the Train Staff System.								REMARKS.
Not on either of the foregoing Systems.					Distance of								
From	To	Dis- tance of Double Line.	Distance of Single Line.		From	To	System as above. (1.)	Train Porter System. (2.)	Train Staff System. (3.)		Length of the Portions of Company's R. and of other Railways worked by th and of other Railways worked by th Goods and Mineral Traffic only.		
			Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.					With Tickets.	With- out Ticket.			
		m. ch.	m. ch.	m. ch.			m. ch.	m. ch.	m. ch.	m. ch.	m. ch.		
-	-	-	-	-	-	-	-	-	-	-	-		
-	-	-	-	-	-	-	-	-	-	-	-		
-	-	-	-	-	Drybrook Road	Bilston	0 55	-	-	-	15 60*		
-	-	-	-	-	-	-	-	-	-	-	-		
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-	-	-	-	-	-								

RAILWAY COMPANY.	Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, OR (Where the System is not continuous, enter separately one under the other, under)									
			WORKED BY TELEGRAPH									
			On the Absolute Block System.							On the Permissive Block System.		
			From	To	Dis- tance of Double Line.	Distance of Single Line.			From	To	Dis- tance of Double Line.	
						Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.	Worked on Elec- trical Train Staff or Tablet System.				
Consist- ing of Two or more Lines of Rails.	Consist- ing of a Single Line of Rails only.											
ENGLAND AND WALES—continued.												
TAFF VALE	m. ch.	m. ch.	Pontypridd Northern Junc.	Rhondda Cutting Junction.	m. ch.	m. ch.	m. ch.	m. ch.	*Cardiff Terminus.	Foot of main incline.	m. ch.	
	57 0	14 7	Rhondda Fach Junction.	Ferndale - -	0 16	-	-	-	*Quaker's Yard Quarry.	Brandy Bridge	13 40	
			Ferndale - -	Mardy Junction -	4 50	-	-	-	*Penarth Junction.	Llandough Upper Jun.	5 41	
			Mardy Junction -	Mardy - - -	0 29	1 42	-	-	*Rhondda Junction.	Treherbert -	10 40	
			Foot of main incline.	Quaker's Yard Quarry.	1 9	-	-	-	*Aberdare Junction.†	Aberdare -	7 30	
			Brandy Bridge Junction.	Mardy - - -	0 35	-	-	-				
			Llandough Upper	Penarth Town -	-	1 48	-	-				
			Penarth Town -	Biglis Junction -	4 47	-	-	-				
	0 35											
	57 35	14 7			11 28	3 10					46 8	
TALYLLYN	-	6 50	-	-	-	-	-	-	-	-		
WEST LANCASHIRE	23 61	-	Southport -	Preston - -	-	-	-	-	-	-	-	
			Preston Junction	Whitehouse Junction.	15 79	-	-	-	-	-	-	
			Penwortham Junction.	Whitehouse Junction.	-	-	-	-	-	-	-	
			Roe Lane Junction.	Meols Cop - -	0 32	-	-	-	-	-	-	
			Hawkshead Street Junction.	Meols Cop - -	0 31	-	-	-	-	-	-	
			Meols Cop - -	Hillhouse Junction.	6 79	-	-	-	-	-	-	
					23 61	-	-	-	-	-	-	
						-	-	-	-	-	-	
						-	-	-	-	-	-	
						-	-	-	-	-	-	
WEST LONDON EX- TENSION.	5 8	-	Junc. with West London Line.	Longhedge Junction.	3 19	-	-	-	-	-	-	
			Latchmere Junction.	W. London Junction (L. & S.W.)	0 38	-	-	-	-	-	-	
			Latchmere Junction.	Clapham Junction (L. & S.W.)	0 40	-	-	-	-	-	-	
			Latchmere Junction.	Clapham Junction (L. B. & S. C.)	0 62	-	-	-	-	-	-	
					5 8	-	-	-	-	-	-	
						-	-	-	-	-	-	
WEST RIDING AND GRIMSBY JOINT. (See GREAT NORTH-BRN.)												
WEST SOMERSET MINERAL.	-	6 0	-	-	-	-	-	-	-	-		
WREXHAM, MOLD, AND CONNAH'S QUAY.	7 42	5 36	Wrexham -	Penyffordd -	7 42	-	-	-	-	-	-	
			Brymbo South Junction.	Brymbo - -		3 30	-	-	-	-	-	
					7 42	3 30	-	-	-	-	-	

RAILWAY COMPANY.	Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, OR (Where the System is not continuous, enter separately one under the other, under)									
			WORKED BY TELEGRAPH									
			On the Absolute Block System.					On the Permissive Block System.				
			From	To	Distance of Single Line.			From	To	Distance of Double Line.		
	Consisting of Two or more Lines of Rails.	Consisting of a Single Line of Rails only.			Distance of Double Line.	Worked by the Train Staff System in addition.	Worked without the Train Staff System.					
SCOTLAND.	m. ch.	m. ch.			m. ch.	m. ch.	m. ch.	m. ch.				m. ch.
AYRSHIRE AND WIGTOWNSHIRE.	—	30 48	Challock Junction	Girvan	—	30 48	—	—	—	—	—	—
CALEDONIAN	443 69	198 5	Carlisle (No. 4 Box).	Glasgow (Buchanan Street Box).	104 46	—	—	—	—	—	—	—
			Port Carlisle Branch	—	0 40	—	—	—	—	—	—	—
			Lockerbie	Dumfries Junction	—	—	—	14 44	—	—	—	—
			Beattock	Moffat	—	1 66	—	—	—	—	—	—
			Symington	Peebles Box	—	19 4	—	—	—	—	—	—
			Strawfrank Junction.	Dolphinton Junction.	0 23	—	—	—	—	—	—	—
			Carstairs	Edinburgh Box	27 45	—	—	—	—	—	—	—
			Dalry (Middle) Junction.	Haymarket (West) Junction.	0 64	—	—	—	—	—	—	—
			Dolphinton Junction.	Bankhead	—	1 50	—	—	—	—	—	—
			Wilsontown (S.) Junction.	Wilsontown	1 33	1 38	—	—	—	—	—	—
			Ravelrig Junction	Balerno Junction	—	—	—	6 2	—	—	—	—
			Slateford Junction	Leith Box	5 40	—	—	—	—	—	—	—
			Dalry Junction	Coltbridge Junction.	0 38	—	—	—	—	—	—	—
			Midcalder Junction.	Mossend (South) Junction.	22 74	—	—	—	—	—	—	—
			Silvermuir (East) Junction.	Silvermuir (South) Junction.	0 19	—	—	—	—	—	—	—
			Cleghorn Junction.	Lanark Box	2 42	—	—	—	—	—	—	—
			Douglas (East) Junction.	Douglas (South) Junction.	—	—	0 24	—	—	—	—	—
			Douglas (Smyllum West) Junction.	Muirkirk Junction.	—	—	—	19 18	—	—	—	—
			Law Junction	Holytown Junction.	5 40	—	—	—	—	—	—	—
			Cleland Junction	Omca Junction	1 25	—	—	—	—	—	—	—
			Omca Junction	Drumbowie Junction.	—	—	—	1 24	—	—	—	—
			Drumbowie Junction.	Morningside Junction.	—	—	2 42	—	—	—	—	—
			Lesmahagow Junction.	Haughhead Junction.	1 79	—	—	—	—	—	—	—
			Hamilton Junction.	Lesmahagow Box	13 67	4 34	—	—	—	—	—	—
			Stonehouse Junction.	Stonehouse	—	3 27	—	—	—	—	—	—
			Southfield Junction.	Blackwood Box	1 62	—	—	—	—	—	—	—
			Strathaven Junction.	Strathaven	6 5	4 15	—	—	—	—	—	—
			Auchenraith Junction.	Blantyre	0 51	—	—	—	—	—	—	—
			Milnwood Junction.	Fullwood Junction	0 33	—	—	—	—	—	—	—
			Fullwood Junction	Uddingston Junction.	3 55	—	—	—	—	—	—	—
			Mossend (West) Junction.	Mossend (North) Junction.	0 39	—	—	—	—	—	—	—
			Whiffet (North) Junction.	Rosehall Junction	0 33	—	—	—	—	—	—	—
			Coatbridge Junction.	Langloan	0 50	—	—	—	—	—	—	—
			Airdrie Box	Rutherglen Junction.	9 22	—	—	—	—	—	—	—
			Airdrie Junction	Chapelhall	1 79	—	—	—	—	—	—	—
			Chapelhall	Newhouse	—	—	—	1 34	—	—	—	—
			Lesmahagow Junction.	Glasgow (Central)	12 57	—	—	—	—	—	—	—
			Bothwell Junction.	Bothwell Box	1 10	—	—	—	—	—	—	—
			Dalmarnock Junction.	Germiston (Low) Junction.	4 39	—	—	—	—	—	—	—
			Loudon Road Junction.	Loudon Road Junction Box.	0 28	—	—	—	—	—	—	—
			Gushefauld Junction.	Langside Junction	0 23	—	—	—	—	—	—	—
			Gushefauld Junction.	Shiels Junction	1 20	—	—	—	—	—	—	—
			Edginton Street Junction.	Strathbungo Junction.	0 09	—	—	—	—	—	—	—
			Line connecting Caledonian Railway with Glasgow and Paisley Joint Line at Bridge Street Junction, Glasgow.	—	0 8	—	—	—	—	—	—	—
			Busby Junction	Busby Box	3 60	—	—	—	—	—	—	—

OTHER RAILWAYS WORKED BY THEM.												REMARKS.
Head applicable, each Main Line or Portion of Main Line or Branch Line so worked.)												
- WORKED BY TELEGRAPH.					Single Lines of Railway (not included in the foregoing Columns), (1.) Worked under the System in which only One Engine in Steam or Two or more Engines coupled together are allowed to be upon the Single Line or portions thereof at one and the same time; or (2.) Worked under the Train Porter System; or (3.) Worked under the Train Staff System.							
Not on either of the foregoing Systems.					From	To	Distance of				Length of the Portions of Company's Railway and of other Railways worked by them for Goods and Mineral Traffic only.	
From	To	Dis- tance of Double Line.	Worked by the Train Staff System in addi- tion.	Worked without the Train staff System.			System as above. (1.)	Train Porter System. (2.)	Train Staff System. (3.)			
									With Tickets.	With- out Ticket.		
		m. ch.	m. ch.	m. ch.			m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	
-	-	-	-	-	Kirtlebridge Junction.	Annan -	-	-	5 43	-	74 33	Note.—The Caledonian Company, in addition to the 198 m. 5 ch. of single line, has a single line of 1 m. 38 ch. of tramway worked by horses from Inchtute Station to Inchtute Village.
-	-	-	-	-	Bankhead -	Dolphinton -	-	-	-	9 23		
					Grangemouth (South Box).	Grangemouth -	-	-	-	0 25		
					Crieff Junction -	Crieff -	-	-	9 0			
					Almond Valley Junction.	Crieff -	-	-	16 3			
					Methven Junction	Methven -	-	-	-	1 22		
					Coupar Angus Junction.	Blairgowrie -	-	-	4 28			
					Newtyle -	Fairmuirs Junction.	-	-	9 73			
					Alyth Junction -	Alyth -	-	-	5 17			
					Kingennie -	Kingsmuir -	-	-	11 40			

RAILWAY COMPANY.	Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, OR (Where the System is not continuous, enter separately one under the other, under)									
			WORKED BY TELEGRAPH - - - - -									
			On the Absolute Block System.					On the Permissive Block System.				
			From	To	Distance of Double Line.	Distance of Single Line.		From	To	Distance of Double Line.		
	Consisting of Two or more Lines of Rails.	Consisting of a Single Line of Rails only.				Worked by the Train Staff System in addition.	Worked without the Train Staff System.	Worked on Electrical Train Staff or Tablet System.				
SCOTLAND—continued.												
CALEDONIAN—cont.	m. ch.	m. ch.	Busby Box - -	Hunthill Junction	m. ch.	m. ch.	m. ch.	m. ch.				m. ch.
			Paisley Junction (Stonybrae Box).	Gourock - - -	18 73	-	-	-				
			Gartsherrie (South Junction).	Gartsherrie (N. British Junc.).	0 11	-	-	-				
			Garnqueen (South Junction).	Garnqueen (North) Juncn.	0 36	-	-	-				
			Gartoosh Junction	Aberdeen - - -	145 37	-	-	-				
			Greenhill (Lower) Junction.	Greenhill (Upper) Jn. with North British.	0 60	-	-	-				
			Bonnybridge Junction.	Bonnybridge - -	0 66	-	-	-				
			Carmuir (East) Junction.	Carmuir (West) Junction.	0 38	-	-	-				
			Grangemouth (Branch) Junc.	Grangemouth (South Box).	2 24	-	-	-				
			Larbert Junction	Denny - - -	-	3 10	-	-				
			Carmuir West Jn. (for Denny).	Denny West Junction.	0 27	-	-	-				
			Alloa Junction -	Throsk - - -	4 9	-	-	-				
			Throsk - - -	Forth Bridge -	-	-	-	0 30				
			Forth Bridge -	Longcarse Junction.	0 72	-	-	-				
			Dunblane - - -	Callander (C. & O.) Junction.	-	-	-	10 15				
			Perth (St. Leonard's Br. Box).	Dundee (Buckingham Jn. Box).	20 55	-	0 22	-				
			Ninewells Junction.	Fairmuirs Junction.	-	4 40	-	-				
			Broughty Junction.	Kingennie - -	-	3 0	-	-				
			Kingsmuir - -	Forfar Junction -	-	2 50	-	-				
			Kirriemuir Junction.	Kirriemuir - -	-	-	-	3 12				
			Ardler Junction -	Newtyle Junction	-	1 37	-	-				
			Alyth Junction -	Newtyle Junction	-	1 0	-	-				
			Newtyle Junction	Newtyle - - -	0 23	-	-	-				
			Guthrie Junction	Friockheim Junction.	1 30	-	-	-				
			Glasterlaw Junction.	Arbroath (St. Vigean's Junc.).	7 1	-	-	-				
			Bridge of Dun Junction.	Brechin Box - -	-	4 0	-	-				
			Dabton - - -	Montrose - - -	-	3 0	-	-				
	443 69	198 5				443 69	58 51	3 8	63 72			
Solway Junction -	-	11 63	-	-	-	-	-	-	-	-	-	-
Greenock and Wemyss Bay.	-	10 6	Wemyss Bay Junction.	Berryards Box -	-	-	-	2 6				
			Berryards Box -	Upper Greenock -	-	-	0 15	-				
			Upper Greenock -	Wemyss Bay - -	-	7 65	-	-				
Callander and Oban	-	71 45	Callander (C. and O.) Junction.	Oban - - -	-	-	-	71 45				
Killin - - -	-	5 4	Killin Junction -	Lock Tay (Killin Pier).	-	5 4	-	-				
Cathcart District -	2 11	-	Cathcart Junction	Cathcart - - -	2 11	-	-	-				
Lanarkshire and Ayrshire.	13 2	3 24	Barrmill Junction	Ardrossan - - -	12 11	-	-	-				
			Giffen - - -	Glengarnock - -	-	-	-	3 24				
			Glengarnock -	Kilbirnie - - -	0 71	-	-	-				
	459 2	200 67				459 2	71 40	3 23	140 67			
CITY OF GLASGOW UNION.	4 57	-	Sighthill Junction	Pollok Junction -	4 57	-	-	-	-	-	-	-

RAILWAY COMPANY.	Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, (Where the System is not continuous, enter separately one under the other, and									
			WORKED BY TELEGRAPH - - - - -									
			On the Absolute Block System.						On the Permissive Block System.			
			From	To	Distance of Double Line.	Distance of Single Line.			From	To	Distance of Double Line.	
	Worked by the Train Staff System in addition.	Worked without the Train Staff System.				Worked on Electrical Train Staff or Tablet System.						
	Consisting of Two or more Lines of Rails.	Consisting of a Single Line of Rails only.										
SCOTLAND—continued.												
DUNDEE AND ARBROATH JOINT.	m. ch. 17 7	m. ch. —	Carolina Port, Dundee. Well-gate Box.	Arbroath South Box. St. Vigeans Junction.	m. ch. 15 67 0 30	m. ch. —	m. ch. —	m. ch. —	-	.	.	m. —
					16 17							
GLASGOW AND KILMARNOCK JOINT.	26 28	2 19	Glasgow - -	Kilmarnock -	23 42	—	—	—	-	.	.	-
			Lugton Junction -	Barmill -	2 66							
			Barmill - -	Beith - -	—	—	—	2 19				
					26 28	—	—	2 19				
GLASGOW AND PAISLEY JOINT.	7 72	—	Glasgow - -	Paisley - -	6 75	—	—	—	-	.	.	-
			Ibrox Junction -	Govan - -	0 77							
					7 72							
GLASGOW AND SOUTH-WESTERN.	234 74	67 55	St. Enoch - -	Clyde Junction -	0 30	—	—	—	-	.	.	-
			Stockwell Street -	Saltmarket Junction.	0 16							
			Port Eglinton Junction.	Canal Junction -	9 7							
			Corsebar Junction	Meikleriggs - -	0 36							
			Potterhill Station	Potterhill Junction.	1 39							
			Stoneybrae -	Kilmarnock No. 1 Cabin.	26 34							
			Kilmarnock No 2 Cabin.	Hurlford, No. 1 Cabin.	1 29							
			Hurlford, No. 2 Cabin.	Lockerbie Junction.	56 7							
			Pleasance Junction.	Gretna Junction	24 12							
			Arkleston Junction.	Fulbar Street, Renfrew.	3 19							
			Elderslie Junction	Greenock (Prince's Pier).	15 26							
			Johnstone Junction.	Cart Junction	0 40							
			Dalry Junction -	Ayr, No. 1 -	17 36							
			Kilwinning Junction.	Ardrossan -	5 14							
			Dubbs Junction -	Byrehill Junction	0 59							
			Holm Junction -	Fairlie Pier -	9 35							
			Fairlie Pier Junction.	Largs - -	2 29							
			Castlehill Junction.	Parkhouse Junction.	0 21							
			Busby Junction -	Irvine Junction -	5 51							
			Barassie Junction	Kilmarnock Junction.	7 57							
			Newton Junction	Mauchline Junction.	10 68							
			Hawkhill Junction.	Blackhouse Junction.	0 22							
			Ayr South Cabin	Dalrymple Junction.	3 1							
			Dalrymple Junction.	Dalrymple Station	0 74							
			Dalrymple Station	Maybole Junction	—	4 0						
			Maybole Junction	Maybole Station -	0 66							
			Maybole Station -	Girvan Junction -	—	12 10						
			Holehouse Junction.	Belston Junction	—	6 9						

OTHER RAILWAYS WORKED BY THEM.														Length of the Portions of Company's Railway and of other Railways worked by them for Goods and Mineral Traffic only.	REMARKS.
Head applicable, each Main Line or Portion of Main Line or Branch Line so worked.)															
WORKED BY TELEGRAPH.					Single Lines of Railway (not included in the foregoing Columns), (1.) Worked under the System in which only One Engine in Steam or Two or more Engines coupled together are allowed to be upon the Single Line or portions thereof at one and the same time; or (2.) Worked under the Train Porter System; or (3.) Worked under the Train Staff System.										
Not on either of the foregoing Systems.															
From	To	Dis- tance of Double Line.	Distance of Single Line.		From	To	Distance of				m. ch.				
			Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.			System as above. (1.)	Train Porter System. (2.)	Train Staff System. (3.)	With Tickets.		With- out Ticket.			
Camper- down Jn.	Carolina, Port Dundee.	m. ch. 0 30*	m. ch. —	m. ch. —	—	—	m. ch.	m. ch.	m. ch.	m. ch.	m. ch. 0 40†	Broughty Junction to Broughty Pier Station.			
Vigancs unc. broath, th Box.	Arbroath, Wellgate Box.	0 21*									5 42†	Elliot Junction to Carmyline.			
		0 51									6 2	Dundee East to Camper- down Junction, 19 ch., worked by other than foregoing systems.			
		—	—	—			—	—	—	—	0 76	* Worked on the electric bell telegraph system, "Station Yard," prin- ciple.			
		—	—	—			—	—	—	—	0 35	† Worked under system No. 3.			
		—	—	—			—	—	—	—	0 31	Kennishead to Spiers- bridge.			
		—	—	—			—	—	—	—	1 62	Old Barrhead Line at S. Side Station.			
		—	—	—			—	—	—	—	0 54	Goods Station Branch, Kilmarnock.			
		—	—	—			—	—	—	—	0 25	Loops at Paisley.			
		—	—	—			—	—	—	—	0 28	Branch to Paisley Goods Station.			
		—	—	—			—	—	—	—	1 25	Off Govan Branch.			
		—	—	—	Dalrymple Junc- tion.	Dalmellington	—	—	11 51	—	—	<i>Time Interval.</i>			
		—	—	—	Gaiston Junction	Newmilns	—	—	1 55	—	—	From.	Double line. m. ch.		
		—	—	—	Castle Douglas No. 2.	Kirkcudbright	—	—	10 50	—	—	Kilmarnock No. 2.	0 28		
		—	—	—	Logan Junction	Belston Junction	—	—	6 78	—	—	Hurlford No. 1 Cabin.	0 25		
		—	—	—	Girvan Junction	Girvan Station	—	—	0 30	—	—	Hurlford Jn., Hurlford Min. Sidings.	0 32		
		—	—	—								Lockerbie Jn.	0 23		
		—	—	—								Renfrew (Ful- bar Street).	0 35		
		—	—	—								Wharf.	0 43		
		—	—	—								Ardrossan Harbour.	0 29		
		—	—	—								Ayr No. 1 Cabin.	0 21		
		—	—	—								Annbank No. 1	2 75		
		—	—	—									0 8		
		—	—	—									0 30		
		—	—	—									0 27		
		—	—	—									0 27		
		—	—	—									0 28		
		—	—	—									0 53		
		—	—	—									0 57		
		—	—	—									0 16		
		—	—	—									1 73		
		—	—	—									0 22		
		—	—	—									1 59		
		—	—	—									1 53		
		—	—	—									3 70		
		—	—	—									0 55		
		—	—	—									1 2		
		—	—	—									0 38		

Only worked over.

† Only worked over.

RAILWAY COMPANY.	Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, OR (Where the System is not continuous, enter separately one under the other, under)									
			WORKED BY TELEGRAPH - - - - -									
			On the Absolute Block System.						On the Permissive Block System.			
			From	To	Dis- tance of Double Line.	Distance of Single Line.			From	To	Dis- tance of Double Line.	
Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.	Worked on Elec- trical Train Staff or Tablet System.										
SCOTLAND—continued.												
GLASGOW AND SOUTH-WESTERN —continued.	m. ch.	m. ch.	Belston Junction	Annbank No. 2 -	m. ch. —	m. ch. 7 25	m. ch.	m. ch.				m. ch.
			Hurlford Mineral Sidings.	Galston Junction	3 33							
			Auchinleck Junction.	Muirkirk - -	10 11							
			Muirkirk Junction	with Cal. Co.	—	—	—	0 30				
			Cumnock Junction	Logan Junction -	0 27							
			Cronberry Junction.	Logan Junction -	—	1 72						
			Castle Douglas Jn., Dumfries.	Dalbeattie - -	14 37							
			Dalbeattie - -	Castle Douglas No. 1.	—	4 65						
			Castle Douglas No. 1.	Castle Douglas No. 2.	0 23							
						231 79	36 21	—	0 30			
GREAT NORTH OF SCOTLAND.	31 50	281 42	Aberdeen - -	Elgin via Grange (S. Junc.) and Buckie.	27 46	—	34 29	25 24†	-	-	-	-
			Grange (South Junction).	Elgin via Craigellachie.	—	—	32 17					
			Grange Station -	Grange North Junction.	—	—	0 56					
			Dyce - -	Peterhead - -	—	—	37 70					
			Maud Junction -	Fraserburgh -	—	—	16 14					
			Kintore - -	Alford - -	—	—	15 68					
			Inveramsey -	Macduff - -	—	—	29 67					
			Tillynaught Junction.	Banff - -	—	—	6 5					
			Lossie Junction -	Lossiemouth -	—	—	4 38					
			Craigellachie -	Boat of Garten -	—	—	33 46					
			Aberdeen - -	Ferryhill - -	3 30	—	39 27					
			Ferryhill - -	Ballater - -	0 54							
				31 50	—	250 37†	25 24					

OF OTHER RAILWAYS WORKED BY THEM.

the Head applicable, each Main Line or Portion of Main Line or Branch Line so worked.)

WORKED BY TELEGRAPH.

Not on either of the foregoing Systems.

Single Lines of Railway (not included in the foregoing Columns),
 (1.) Worked under the System in which only One Engine in Steam
 or Two or more Engines coupled together are allowed to be
 upon the Single Line or portions thereof at one and the same time; or
 (2.) Worked under the Train Porter System; or
 (3.) Worked under the Train Staff System.

		Distance of Single Line.		(3.) Worked under the Train Staff System.				Distance of		Length of the Portions of Railway and of other Railways worked by them for Goods and Mineral Traffic only.	REMARKS.	
From	To	Dis- tance of Double Line.	Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.	From	To	System as above. (1.)	Train Porter System. (2.)	Train Staff System. (3.)			
												With Tickets.
		m. ch.	m. ch.	m. ch.			m. ch.	m. ch.	m. ch.	m. ch.		
										0 03	Irvine Harbour Branch.	
										0 32	Irvine Harbour. Branch along New Quay.	
										0 31	Irvine Chemical Branch.*	
										0 60	Perceton Branch.	
										2 13	Barassie Junction to Troon Harbour.	
										1 35	Fairlie Branch, Troon Line.	
										0 13	Troon Harb. Termination of K. and T. Ry. at store to end of West Breakwater.	
										0 51	Troon Harb. K. & T. Ry., near Temple Hill, along East Breakwater.	
										0 64	Falkland Junction to Ayr Goods Station.	
										0 9	Newton Lodge Junction Line.	
										0 20	Old Harbour Branch, Ayr.	
										0 58	New Harbour Branch, Ayr.	
										1 2	Ayr Dock Lines, Nos. 1 to 4.	
										0 30	Maybole Jn. to Maybole Goods Station.	
										0 14	Branch to Girvan Har- bour.	
										1 37	Mayfield Branch.	
										1 24	Mayfield Branch.*	
										0 35	Goatfoot Branch.*	
										0 37	Rankinston Branch.	
										2 30	Dykes Branch.*	
										0 36	Lugar Junction to Lugar Ironworks.	
										1 21	Gasswater Branch.	
										2 0	Gilmilnscroft Branch.*	
										0 35	South Side to Langside Junction.	
										0 31	Goods Station Branch at Kilmarnock.	
										0 76	Thornie Bank Branch.	
										0 27	Victoria Pit Branch (horse).	
										0 18	Woodhill Branch.	
										0 19	Bellahouston Junction.	
										0 15	Garliestown to Garlies- town Harbour.	
							—	—	31 4	—	37 40	* Only worked over.
					Inverurie	Old Meldrum	5 61	—	—	—	—	† From Portsoy to Lossie Junction.
							5 61					‡ These lines are worked under system No. 1 combined with absolute block system.

RAILWAY COMPANY.	Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, OR (Where the System is not continuous, enter separately one under the other, under									
			WORKED BY TELEGRAPH - - - - -									
			On the Absolute Block System.					On the Permissive Block System.				
			From	To	Distance of Double Line.	Distance of Single Line.	Distance of Single Line.	From	To	Distance of Double Line.	Distance of Single Line.	Distance of Single Line.
	Consisting of Two or more Lines of Rails.	Consisting of a Single Line of Rails only.				Worked by the Train Staff System in addition.	Worked without the Train Staff System.	Worked on Electrical Train Staff or Tablet System.				
SCOTLAND—continued.												
HIGHLAND . . .	m. ch. 6 65	m. ch. 412 404	Inverness - -	Dalcross - -	m. ch. 6 65	m. ch.	m. ch.	m. ch.	.	.	.	m. ch. -
			Buckie - -	Portessie - -	- -	- -	- -	1 38				
NORTH BRITISH . . .												
	420 20	405 49	Edinburgh West	Granton - -	4 9	- -	- -	- -	Manuel -	Kinneil -	3 31*	
			Lochend Junction	London Road Junction.	0 27				Blackston Junction.	Arbuckle -	8 77*	
			Bonnington (S. Junction).	North Leith -	0 73				Blackston Junction.	Lower Bathgate.	4 6*	
			Bonnington (N. Junction).	Bonnington (East Junction).	0 17				Bathgate Chemical Works.	Blackhall -	9 30*	
			Easter Road Junction.	Piershill Junction	0 77							
			Abbeyhill Junction	Berwick N.E. -	56 43							
			Newhailes Junction.	Musselburgh -	0 79							
			Glenesk Junction	Dalkeith - -	0 30							
			Portobello East Junction.	Galashiels North	30 8							
			Galashiels (Central).	St. Boswells (North).	7 0							
			St. Boswells (South).	Carlisle No. 1 -	56 63							
			St. Boswells, Kelso Junc.	Jn. with N.E. Ry. near Sprouston.	12 43							
			Hardengreen Junction.	Hawthornden Junction.	3 21							
			Niddrie West Junction.	Niddrie South Junction.	0 59							
			Niddrie West Junction.	Niddrie East Junction.	1 32							
			Haymarket West Junction.	Gorgie Junction -	0 40							
			Haymarket Central Junction.	Niddrie North Junction.	6 66							
			Polmont Junction	Grahamston (East)	3 2							
			Grahamston West	Larbert Junction	2 13							
			Edinburgh West	Polmont Station -	22 9							
			Polmont Junction	Cowlairs West Junction.	22 72							
			Cowlairs Station	Glasgow (Queen Street).	1 40							
			Cowlairs West Junction.	Sighthill C.U. Junction.	0 50							
			Cowlairs East Junction.	Cowlairs North Junction.	0 18							
			Cowlairs West Junction.	Balloch Pier -	18 78							
			Dalrooch Tunnel	Helensburgh -	6 78							
			Knightswood N. Junction.	College East C.U. Junction.	5 56							
			Partick Junction	Hyndland - -	0 74							
			Knightswood S. Junction.	Maryhill West Junction.	0 69							
			Lenzie Junction -	Blane Valley Junction.	5 5							
			Kelvin Valley West Junction.	Kelvin Valley East Junction.	0 29							
			Glasgow (Bellgrove).	Brownieside Junction.	12 38							
			Sunnyside Junction.	Bothwell Junction	6 19							
			Greenside Junction.	Foot of Ballochney Incline.	0 55							
			Shettleston Junction.	Hamilton - -	7 45							

OF OTHER RAILWAYS WORKED BY THEM.

the Head applicable, each Main Line or Portion of Main Line or Branch Line so worked.)

WORKED BY TELEGRAPH.					Single Lines of Railway (not included in the foregoing Columns), (1.) Worked under the System in which only One Engine in Steam or Two or more Engines coupled together are allowed to be upon the Single Line or portions thereof at one and the same time; or (2.) Worked under the Train Porter System; or (3.) Worked under the Train Staff System.					REMARKS.	
Not on either of the foregoing Systems.					From	To	Distance of				
From	To	Dis- tance of Double Line.	Distance of Single Line.				System as above. (1.)	Train Porter System. (2.)	Train Staff System, (2.)		
			Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.					With Tickets.		With- out Ticket.
m. ch.	m. ch.	m. ch.									
-	-	-	-	-	Dalcross - -	Stanley - -	m. ch. 129 72	m. ch.	-	-	Length of the Portions of Company's Railway worked by them for Goods and Mineral Traffic only. * Single line. "Permissive block" as regards goods, mineral, and ballast trains, but "absolute block" for passenger trains.
-	-	-	-	-	Inverness - -	Wick - -	161 7	-	-	-	
-	-	-	-	-	Forres - -	Keith - -	30 27	-	-	-	
-	-	-	-	-	Georgemas - -	Thurso - -	6 52	-	-	-	
-	-	-	-	-	Dingwall - -	Strome Ferry -	53 6	-	-	-	
-	-	-	-	-	Keith - -	Buckie - -	12 0	-	-	-	
-	-	-	-	-	Alves - -	Burghead - -	5 37	-	-	-	
-	-	-	-	-	Ballinluig - -	Aberfeldy - -	8 59	-	-	-	
-	-	-	-	-	Fodderty Junction	Strathpeffer -	2 40	-	-	-	
-	-	-	-	-	Inverness - -	Caledonia Canal -	0 57½	-	-	-	
-	-	-	-	-	Inverness - -	Harbour - -	0 45	-	-	-	
-	-	-	-	-			411 2½	-	-	-	
-	-	-	-	-	Rawyards East -	Rawyards West -	-	0 21	-	-	
-	-	-	-	-	Seafield Junction	South Leith Station.	-	0 69	-	-	
-	-	-	-	-	Portobello - -	Seafield Junction	-	-	1 76	-	
-	-	-	-	-	Esk Valley Junction.	Polton - -	-	-	2 8	-	
-	-	-	-	-	Millerhill Junction	Roslin - -	-	-	5 69	-	
-	-	-	-	-	Hawthornden Junction.	Penicuik - -	-	-	4 31	-	
-	-	-	-	-	Leadburn Junction	Dolphinton - -	-	-	9 70	-	
-	-	-	-	-	Hawthornden Junction.	Leadburn Junction.	-	-	6 20	-	
-	-	-	-	-	Peebles - -	Kilnknowe Junction.	-	-	17 35	-	
-	-	-	-	-	Menktonhall Junction.	Smeaton Junction	-	-	1 39	-	
-	-	-	-	-	Smeaton Junction	Macmerry - -	-	-	0 54	-	
-	-	-	-	-	Longniddry Junction.	Haddington -	-	-	4 60	-	
-	-	-	-	-	Drem Junction -	North Berwick -	-	-	4 60	-	
-	-	-	-	-	Reston Junction -	Ravenswood Junction.	-	-	29 26	-	
-	-	-	-	-	Selkirk Junction, Galashiels.	Selkirk - -	-	-	5 14	-	
-	-	-	-	-	Roxburgh Junction.	Jedburgh - -	-	-	7 8	-	
-	-	-	-	-	Riddings Junction	Langholm - -	-	-	7 8	-	
-	-	-	-	-	Longtown Junction.	Gretna - -	-	-	3 27	-	
-	-	-	-	-	Drumburgh - -	Port Carlisle -	-	-	2 54	-	
-	-	-	-	-	Canal Junction -	Kirkbride Junction.	-	-	11 79	-	
-	-	-	-	-	Abbey Junction -	Silloth - -	-	-	5 22	-	
-	-	-	-	-	Riccarton Junction.	Hexham Junction	-	-	40 71	-	
-	-	-	-	-	Reedsmouth Junction.	Morpeth, North-East Station.	-	-	25 10	-	
-	-	-	-	-	Scotsgap Junction	Rothbury - -	-	-	13 4	-	
-	-	-	-	-	Broomfield Junction.	Bervie - -	-	-	12 8	-	
-	-	-	-	-	Leuchars South Junction.	St. Andrews (Links).	-	-	4 57	-	
-	-	-	-	-	Markinch Junction	Leslie - -	-	-	4 17	-	
-	-	-	-	-	Ladybank - -	Tillicoultry - -	-	-	28 43	-	
-	-	-	-	-	Kinross Junction	Kelty - -	-	-	5 63	-	
-	-	-	-	-	Cambus Junction	Alva - -	-	-	3 45	-	
-	-	-	-	-	Kinniel - -	Bo'ness - -	-	-	0 64	-	
-	-	-	-	-	Queensferry Jn. (Ratho).	South Queensferry	-	-	5 47	-	
-	-	-	-	-	Milngavie Junction.	Milngavie - -	-	-	3 15	-	

RAILWAY COMPANY.	Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, OR (Where the System is not continuous, enter separately one under the other, under									
			WORKED BY TELEGRAPH - - - - -									
			On the Absolute Block System.						On the Permissive Block System.			
			From	To	Distance of Double Line.	Distance of Single Line.			From	To	Distance of Double Line.	
						Worked by the Train Staff System in addition.	Worked without the Train Staff System.	Worked on Electrical Train Staff or Tablet System.				
Consisting of Two or more Lines of Rails.	Consisting of a Single Line of Rails only.											
SCOTLAND -continued.												
NORTH BRITISH— continued.	m. ch.	m. ch.	Bathgate Junction (Ratho).	Polkemmet Junction.	m. ch. 10 47	m. ch.	m. ch.	m. ch.				m. ch.
			Rawyards East -	Arbuckle - -	1 49							
			Gartsherrie N.B. Junction.	Garnqueen Junction.	0 41							
			Burntisland E. -	Tayport - -	35 53							
			Leuchars (North Junction).	Camperdown Junction.	9 28							
			Dundee Central Junction.	Buckingham Junction.	0 18							
			Ladybank North	Hilton Junction -	16 54							
			Montrose South Junction.	Montrose North Junction.	0 32							
			Hillside - -	Kinnaber Junction	0 38							
			Thornton South Junction.	Thornton West Junction.	0 21							
			Thornton Central Junction.	Dunfermline (East).	14 71							
			Dunfermline (West).	Shore Road, L. C. Stirling.	20 1							
			Dunfermline (Lower).	Inverkeithing -	3 68							
			Alloa West Junction.	Longcarse Junction.	0 45							
			Alloa East - -	Tillicoultry - -	3 16							
			Thornton East Junction.	Metlil - - -	— 5 18							
			Roslin - - -	Glencorse - -	— 2 1							
			Inverkeithing -	North Queensferry	— 1 61							
			S. Queensferry -	Port Edgar - -	— 0 71							
			Maryhill East Junction.	Kilsyth - - -	— 11 19							
			Montrose North Junction.	Broomfield Junction.	— 0 54							
			Lumphinnans Junction.	Kelty - - -	— —		2 0					
			Leadburn - -	Peebles (Caledonian Junction).	— —		10 23					
			Kirkbride Junction.	Abbey Junction -	— —		3 73					
			Manuel - -	Blackston Junction.	— —		4 30					
			Ballochney (Inchic Foot).	Rawyards - -	— —		1 18					
			Lower Bathgate -	Polkemmet Junction.	— —		0 59					
			Polkemmet Junction.	Bathgate Chemical Works.	— —		0 50					
			Blackhall - -	Morningside -	— —		3 53					
			Thornton North Junction.	Anstruther New Signal Box.	— —		—	18 40				
			St. Vigeans Junction.	Montrose South Junction.	— —		—	12 56				
			Montrose North Junction.	Hillside - -	— —		—	1 50				
			Dalreoch Junction	Dalreoch Tunnel	— —		—	0 50				
			Polkemmet Junction.	Brownieside -	— —		—	11 45				
LINES WORKED:												
Anstruther and St. Andrews.	—	16 2	Anstruther New Signal Cabin.	St. Andrews (Links.)	— 16 2							
Blane Valley and Strathendrick and Aberfoyle.	—	16 48	Blane Valley Junction.	Gartness Junction	— 11 16							
			Buchlyvie Junction.	Aberfoyle - -	— 5 32							
Forth and Clyde -	—	29 74	Stirling New Bridge Level Crossing.	Buchlyvie Junction.	— —		15 18					
			Gartness Junction	Balloch (Forth and Clyde) Jn.	— —		8 39					
			Buchlyvie - -	Gartness Junction	— —		—	6 17				
Glasgow, Yoker, and Clydebank.	—	3 30	Whiteinch Junction.	Clydebank -	— 3 30							
Newport - - -	—	4 66	Tayport - -	Tay Bridge South	— —		—	4 66				
Total -	420 20	473 29			420 20	57 64	50 43	56 4				*25 64

OF OTHER RAILWAYS WORKED BY THEM.

the Head applicable, each Main Line or Portion of Main Line or Branch Line so worked.)

WORKED BY TELEGRAPH.

Not on either of the foregoing Systems.

From	To	Dis- tance of Double Line.	Distance of Single Line.	
			Worked by the Train Staff System in addi- tion.	Worked <i>without</i> the Train Staff System.

Single Lines of Railway (not included in the foregoing Columns),
(1.) Worked under the System in which only One Engine in Steam
or Two or more Engines coupled together are allowed to be
upon the Single Line or Portions thereof at one and the same time; or
(2.) Worked under the Train Porter System; or
(3.) Worked under the Train Staff System.

From	To	Distance of			
		System as above. (1.)	Train Porter System. (2.)	Train Staff System. (3.)	
				With Tickets.	With- out Ticket.

Length of the Portions of Company's Railway
and of other Railways worked by them for
Goods and Mineral Traffic only.

REMARKS.

m. ch. m. ch. m. ch.

m. ch. m. ch. m. ch. m. ch. m. ch.

1 10 285 4 — 114 26

* See note p. 79.

RAILWAY COMPANY.	Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, OR (Where the System is not continuous, enter separately one under the other, under									
			WORKED BY TELEGRAPH									
			On the Absolute Block System.						On the Permissive Block System.			
			From	To	Dis- tance of Double Line.	Distance of Single Line.			From	To	Dis- tance of Double Line.	
Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.	Worked on Elec- trical Train Staff or Tablet System.										
	Con- sisting of Two or more Lines of Rails.	Con- sisting of a Single Line of Rails. only.										
SCOTLAND—continued.												
	m. ch.	m. ch.			m. ch.	m. ch.	m. ch.	m. ch.			m. ch.	
NORTH BRITISH—continued.												
			Mineral Lines.									
			Sunnyside Junction.	Gunnie . . .	0 25							
			Thornton East .	Thornton West Junction.	—	0 31	—					
			Brownieside Junction.	Rawyards . .	—	—	1 43					
			Westcraigs . .	Blackhall . .	—	—	7 19					
			Langloan Junction.	Langloan Iron-works.	—	—	0 32					
			Blantyre Junction	Blantyre Pits .	—	—	1 14					
			Trinity Junction.	Warriston Junction.	—	—	0 51					
			Bonnington (East)	Warriston Junction.	—	—	0 47					
			Townhill Junction.	Dunfermline Lower.	—	—	1 72					
			Charlestown Junction.	Charlestown .	—	—	3 42					
			Alloa Central Junction.	New Harbour Branch Junc.	—	—	0 29					
			Townhill Junction.	Lassodie Junction	—	—	4 22					
			Elgin Crossing .	Lilliehill Junction	—	—	1 63					
			Avenuehead .	Garnraiber High Junction.	—	—	—	3 30				
					0 25	0 31	23 34	3 30				
			New Block Telegraphs complete or in progress but not in practical operation.									
			(See page 99.)									
PORTPATRICK AND WIGTOWNSHIRE.												
	—	81 78	Newton Stewart .	Whithorn . . .	—	19 18	—	—	—	—	—	
			Stranraer . . .	Castle Douglas Junction.	—	—	—	53 23				
						19 18	—	53 23				

OF OTHER RAILWAYS WORKED BY THEM.

The Head applicable, each Main Line or Portion of Main Line or Branch Line so worked.)

WORKED BY TELEGRAPH.					Single Lines of Railway (not included in the foregoing Columns). (1.) Worked under the System in which only One Engine in Steam or Two or more Engines coupled together are allowed to be upon the Single Line or portions thereof at one and the same time; or (2.) Worked under the Train Porter System; or (3.) Worked under the Train Staff System.					Length of the Portion of Company's Railway and of other Railways worked by them for Goods and Mineral Traffic only.	REMARKS.	
Not on either of the foregoing Systems.					From	To	Distance of					
From	To	Distance of Double Line.	Distance of Single Line.				System as above. (1.)	Train Porter System. (2.)	Train Staff System. (3.)			
			Worked by the Train Staff System in addition.	Worked without the Train Staff System.					With Tickets.			Without Ticket.
		m. ch.	m. ch.	m. ch.			m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	
Mineral Lines.					Mineral Lines.							
Interval of Time.												
Canal Junction.	Carlisle Canal Stn.	0 47			Bonnington New Branch	- - -	0 7					
W. Jn. Sighthill -		1 27			Glencorse -	Penicuik Gas Co.'s Works.	0 57					
Low Level Line at		0 47			Kirkcaldy Harbour Branch	- - -	0 51					
Stobcross.		0 48			Lochore Branch	- - -	1 5					
Art. North		0 48			Dalmonach Branch	- - -	0 62					
herrie. British Jn.		1 75			Kirkliston Distillery Siding	- - -	0 20				1 50	St. Leonard's Branch.
arnqueen Avenue-head.		0 72			Drumshoreland Broxburn Branch	- - -	1 50				0 44	Caledonian Junction. Caledonian Station, Peebles.
ridgess Branch					Rough Castle Branch	- - -	0 63				2 72	Smeaton Junction. Harden-green.
		5 76			Hartwoodhill Branch	- - -	1 45				0 39	Whifflet Calder Iron-works signal-box.
					Castlehill Branch Junction.	Hyndshaw Pit Sidings.	1 60				1 21	Tranent Branch.
					East Benhar Branch	- - -	1 69				0 37	Inverkeithing Harbour Branch.
					Blackbraes Branch	- - -	4 15				0 70	Elgin Crossing. Lochhead.
					Dykehead and Raebog Branches	- - -	5 14				0 58	Elgin Crossing. Whitemyre.
					Thrusbush Branch	- - -	1 39				4 4	Lilliehill - Steel End.
					Bowhouse Branch	- - -	1 61				2 25	Kelty Lassodie Junction. Junction.
					Bellsdyke Branch, No. 1	- - -	0 40				0 71	Cameron Bridge. Pits Jn.
					Springbank Branches	- - -	1 26				0 52	Severn Dock Branch.
					West Calder Branch	- - -	2 4				0 51	New Alloa Harbour Branch.
					Ballochney Branch	- - -	0 59				0 58	Bo'ness Junction. Blackbraes Junction.
					Heathery Knowe Branch	- - -	0 79				0 68	Knightswood Branch.
					Ruchill Branch	- - -	0 67				1 23	Camelon Branch.
					Gartness Branch	- - -	1 7				0 40	Common-head. Airdie North.
					Woodend	- - -	0 76				0 46	Auchenraith Branch.
					Warriston Junction.	Scotland Street -	-	0 30			0 48	Calder Ironworks. Head of Palace Craig Branch.
					Cameron Pits Junction.	Muireidge -	-	0 42			1 57	Addiewell Junction. Addiewell.
					Blairadam Branch	- - -	-	0 59			3 51	Uphall - Torrance's Quarry.
					Middlemuir Junction.	Garngaber Low Junction.	-	1 50			1 32	Calderbank Branch Jn. Nest.
					Woodley's Lye	Canal Basin, Kirkintilloch.	-	0 72			0 60	Broxburn Albion Oil-works.
					Springfield Branch	- - -	-	0 10			1 19	Whiteinch Whiteinch.
					Armadales Branch	- - -	-	0 66			0 48	Belisdye Branch No. 2.
					Langloan Junction.	Point of entrance to Sheepford Branch.	-	0 11			8 20	Sun Tube Works Siding. North Monkland Junction.
					Souterhouse Branch	- - -	-	0 44				
					Kipps Junction	Sun Tube Works	-	0 42				
					Hyndshaw Pit Sidings.	Castlehill Goods Shed.	-	1 8				
					Coltness Branch	- - -	-	0 67				
					Port Dundas Branch	- - -	-	0 55			39 53	
							32 21	8 76			114 20	Total of Mineral Lines.
					Portpatrick	Stranraer	-	-	-	7 37		
					Millisle Junction	Garliestown	-	-	-	1 0		
					Stranraer Harbour Junction.	Stranraer Harbour	-	-	1 0			
							-	-	1 0	8 37		

RAILWAY COMPANY.	Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, OR (Where the System is not continuous, enter separately one under the other, under)										
			WORKED BY TELEGRAPH										
			On the Absolute Block System.							On the Permissive Block System.			
			From	To	Dis- tance of Double Line.	Distance of Single Line.			From	To	Dis- tance of Double Line.		
	Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.				Worked on Elec- trical Train Staff or Tablet System.							
Consisting of Two or more Lines of Rails.	Consisting of a Single Line of Rails only.												
IRELAND.													
BALLYCASTLE - -	m. ch. —	m. ch. 16 20	Ballymoney -	Ballycastle - -	m. ch. —	m. ch. 16 20	m. ch. —	m. ch. —	-	-	-	-	m. ch. —
BELFAST AND COUNTY DOWN.	7 0	60 60	Belfast -	Holywood - -	4 40	—	—	—	-	-	-	-	—
			Belfast - -	Comber - -	2 40	5 40							
					7 0	5 40							
BELFAST AND NORTHERN COUNTIES. Carrickfergus and Larne.	33 20	151 28	Belfast - -	Ballymena Pas- senger Station.	33 20	—	—	—	-	-	-	-	—
			Carrick Junction	Carrickfergus -	—	2 76							
			Ballymoney -	Portrush - -	—	14 22							
			Magherafelt -	Money more -	—	6 35							
			Ballymena -	Parkmore - -	—	14 1½							
			Ballymena -	Larne Harbour -	—	25 34½							
			Doagh - -	Ballyboley -	—	5 73½							
			King's Bog - -	Ballyclare -	—	3 44							
Derry Central -	—	29 22	Magherafelt -	Macfin Junction -	—	29 22							
Limavady and Dun- given.	—	10 25	-	-	—	—	—	—	-	-	-	-	—
Draperstown -	—	6 50	Draperstown Junction.	Draperstown -	—	6 50							
	33 20	212 18			33 20	108 37							
CASTLEDERG AND VICTORIA BRIDGE.	—	7 0	-	-	—	—	—	—	-	-	-	-	—
CAVAN, LEITRIM, AND ROSCOMMON LIGHT.	—	48 39	Belturbet -	Dromod - -	—	33 62	—	—	-	-	-	-	—
CLOGHER VALLEY -	—	37 0	-	-	—	—	—	—	-	-	-	-	—
CORK AND MACROOM DIRECT.	—	24 60	-	-	—	—	—	—	-	-	-	-	—
CORK AND MUS- KERRY LIGHT.	—	18 0	-	-	—	—	—	—	-	-	-	-	—
CORK, BANDON, AND SOUTH COAST.	—	84 44	-	-	—	—	—	—	-	-	-	-	—
CORK, BLACKROCK, AND PASSAGE.	—	6 37	Cork -	Passage - -	—	6 37	—	—	-	-	-	-	—

OF OTHER RAILWAYS WORKED BY THEM.

the Head applicable, each Main Line or Portion of Main Line or Branch Line so worked.)

OF OTHER RAILWAYS WORKED BY THEM.													REMARKS.
the Head applicable, each Main Line or Portion of Main Line or Branch Line so worked.)													
WORKED BY TELEGRAPH.					Single Lines of Railway (not included in the foregoing Columns), (1.) Worked under the System in which only One Engine in Steam or Two or more Engines coupled together are allowed to be upon the Single Line or portions thereof at one and the same time; or (2.) Worked under the Train Porter System; or (3.) Worked under the Train Staff System.								
Not on either of the foregoing Systems.													
From	To	Dis- tance of Double Line.	Distance of Single Line.		From	To	Distance of				Length of the Portions of Company's Railway and of other Railways worked by them for Goods and Mineral Traffic only.		
			Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.			System as above. (1.)	Train Porter System. (2.)	Train Staff System. (3.)				
		m. ch.	m. ch.	m. ch.			m. ch.	m. ch.	m. ch.	m. ch.	m. ch.		
Belfast	Donagh- adee.	—	14 0*	—			—	—	—	—	—	* Worked by telegraphing from one station to another on ordinary speaking instruments, permitting only one train in a section at a time.	
Ballyna- hinch Jn.	Ballyna- hinch.	—	3 40*	—			—	—	—	—	—		
Comber	Newcastle	—	30 0*	—			—	—	—	—	—		
Holywood	Bangor	—	7 60*	—			—	—	—	—	—		
			55 20										
					Ballymena Pas- senger Station.	Ballymoney	—	—	19 70	—	2 22†	† Parkmore to Retreat.	
					Coleraine	Londonderry	—	—	33 42	—			
					Cookstown Junc- tion.	Magherafelt	—	—	17 44	—			
					Limavady Junc- tion.	Limavady	—	—	3 19	—			
					Money more	Cookstown	—	—	4 48	—		‡ Narrow gauge.	
					Carrickfergus	Larne Harbour	—	—	14 53	—			
					Limavady	Dungiven	10 25	—	—	—			
							10 25	—	93 36	—			
							7 0	—	—	—			
					Ballinamore	Arigna	14 57	—	—	—			
					Tynan	Maguires Bridge	—	—	37 0§	—		§ Telegraphic communi- cation is always made when a train proceeds with a ticket.	
					Cork	Macroom	—	—	24 60	—			
					Cork	Junction	—	—	6 20	—			
					Junction	Dripsey	—	—	5 0	—			
					Dripsey	Coachford	—	—	4 20	—			
					Junction	Blarney	—	—	2 40	—			
							—	—	18 0	—			
					Cork	Bandon	—	—	20 0	—			
					Bandon	Dunmanway	—	—	17 60	—			
					Kinsale Junction	Kinsale	—	—	10 60	—			
					Dunmanway	Skibbereen	15 60	—	—	—			
					Drinoleague	Bantry	11 40	—	—	—			
					Clonakilty Junc.	Clonakilty	8 64	—	—	—			
							36 4	—	48 40	—			
							—	—	—	—			

RAILWAY COMPANY.	Total Length of the Company's Railway open for Passenger Traffic, and of all other Railways open for Passenger Traffic which are worked by them.		PORTIONS OF THE COMPANY'S RAILWAYS, OR (Where the System is not continuous, enter separately one under the other, under									
			WORKED BY TELEGRAPH									
			On the Absolute Block System.					On the Permissive Block System.				
	Con- sisting of Two or more Lines of Rails.	Con- sisting of a single Line of Rails only.	From	To	Dis- tance of Double Line.	Distance of Single Line.			From	To	Dis- tance of Double Line.	
					Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.	Worked on Elec- trical Train Staff or Tablet System.					
IRELAND—continued.												
DUBLIN, WICKLOW, AND WEXFORD.	m. ch. 28 69	m. ch. 114 40	Blackrock -	Killiney -	m. ch. 6 0	m. ch. —	m. ch. —	m. ch. —	-	-	-	m. ch. —
			Palace -	New Ross -	—	8 0			-	-	-	
					6 0	8 0						
DUNDALK, NEWRY, AND GREENORE.*	—	26 77	Dundalk -	Barrack Street, Greenore.	—	12 77	—	—	-	-	-	—
			Newry -	Greenore -	—	14 0			-	-	-	
						26 77						
FINN VALLEY -	—	13 18	-	-	—	—	—	—	-	-	-	—
GREAT NORTHERN -	137 16	382 37	Dublin -	Raheny -	3 60	—	—	—	-	-	-	—
			Moirs -	Belfast -	14 40				-	-	-	
			East Wall Junc- tion.	Cabin A. -	0 20				-	-	-	
			Knockmore Junc- tion.	Brookmount -	—	1 64			-	-	-	
			Knockmore Junc- tion.	Hillsboro' -	—	2 60			-	-	-	
			Dungannon Junc- tion.	Cookstown -	—	13 54			-	-	-	
					18 40	18 18						
†GREAT SOUTHERN AND WESTERN OF IRELAND. Fermoy and Lismore	208 15	313 28	Kingsbridge -	North Wall -	5 37	—	—	—	-	-	-	—
			Kingsbridge -	Kildare -	30 0				-	-	-	
	—	15 21	Sallins -	Naas -	2 0				-	-	-	
			Naas -	Tullow -	—	32 40			-	-	-	
			Gortalea -	Farranfore -	—	—	—	3 60	-	-	-	
			Farranfore -	Killorglin -	—	—	—	12 34	-	-	-	
			Blarney -	Cork -	5 75				-	-	-	
			Cork -	Grattan's Hill -	1 1				-	-	-	
			Queenstown Junction.	Queenstown -	5 75				-	-	-	
	Clara and Banagher -	—	17 30	Clara Junction -	Banagher -	—	17 30			-	-	-
	208 15	345 79			50 28	49 70	—	16 14				
LONDONDERRY AND LOUGH SWILLY.	—	30 49	-	-	—	—	—	—	-	-	-	

* Extracted from the London and North-Western Railway Company's return.

OF OTHER RAILWAYS WORKED BY THEM.

the Head applicable, each Main Line or Portion of Main Line or Branch Line so worked.)

WORKED BY TELEGRAPH.					Single Lines of Railway (not included in the foregoing Columns), (1.) Worked under the System in which only One Engine in Steam or Two or more Engines coupled together are allowed to be upon the Single Line or portions thereof at one and the same time; or (2.) Worked under the Train Porter System; or (3.) Worked under the Train Staff System.					REMARKS.	
Not on either of the foregoing Systems.					From	To	Distance of				
From	To	Dis- tance of Double Line.	Distance of Single Line.				System as above. (1.)	Train Porter System. (2.)	Train Staff System. (3.)		
			Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.				With Tickets.	With- out Ticket.		
m. ch.	m. ch.	m. ch.									
-	-	-	-	-	Killiney - - Bray - -	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	
-	-	-	-	-	Bray - - Newcastle - -	-	-	106 40	-	-	
-	-	-	-	-	Wicklow - - Wexford - -	-	-	-	-	-	
-	-	-	-	-	Woodenbridge - - Shillelagh - -	-	-	-	-	-	
-	-	-	-	-	Macmine - - Ballywilliam - -	-	-	-	-	-	
-	-	-	-	-	- - - - -	-	-	-	-	-	
-	-	-	-	-	Strabane Junction Stranorlar - -	13 18	-	-	-	-	
-	-	-	-	-	Howth Branch - - - - -	3 51*	-	-	-	3 50	
-	-	-	-	-	Drogheda - - Oldcastle - -	-	-	39 40	-	-	
-	-	-	-	-	Scarva - - Banbridge - -	-	-	6 47	-	-	
-	-	-	-	-	Dundalk - - Enniskillen - -	-	-	63 0	-	-	
-	-	-	-	-	Cootehill Branch - - - - -	-	-	7 45	-	-	
-	-	-	-	-	Enniskillen - - Londonderry - -	-	-	59 31	-	-	
-	-	-	-	-	Bundoran Line - - - - -	-	-	35 48	-	-	
-	-	-	-	-	Fintona Branch - - - - -	-	-	-	0 49	-	
-	-	-	-	-	Portadown Junc. Omagh - - - -	-	-	41 20	-	-	
-	-	-	-	-	Portadown Junc. Cavan - - - -	-	-	31 58	-	-	
-	-	-	-	-	Brookmount - - Antrim - - - -	-	-	16 56	-	-	
-	-	-	-	-	Hillsboro' - - Banbridge - -	-	-	12 40	-	-	
-	-	-	-	-	Armagh - - Newry and War- renpoint.	-	-	27 60	-	-	
-	-	-	-	-	Banbridge - - Ballyroney - -	9 33	-	-	-	-	
-	-	-	-	-	Ballyhaise - - Belturbet - -	4 20	-	-	-	-	
-	-	-	-	-	Inniskeen - - Carrickmacross - -	6 55	-	-	-	-	
-	-	-	-	-	- - - - -	23 79	-	341 45	0 49	3 50	
-	-	-	-	-	- - - - -	-	-	260 25	-	-	
-	-	-	-	-	Fermoy - - Lismore - - - -	-	-	15 21	-	-	
-	-	-	-	-	Gortatlea - - - - - Castleisland - -	4 29	-	-	-	-	
-	-	-	-	-	- - - - -	-	-	-	-	-	
-	-	-	-	-	- - - - -	4 29	-	275 46	-	-	
-	-	-	-	-	- - - - -	-	-	-	-	-	
-	-	-	-	-	Londonderry - - Buncrana - - - -	12 2	-	-	-	-	
-	-	-	-	-	Junction with Londonderry & Lough Swilly Ry. Letterkenny - -	13 47	-	-	-	-	
-	-	-	-	-	- - - - -	30 49	-	-	-	-	

Length of the Portions of Company's Lines and of other Railways worked by the Goods and Mineral Traffic only.

Belfast Central Railway.
* 1 m. 74 ch. of which is double line.

† All trains on double and single lines are telegraphed from station to station during the hours the telegraph offices are open.

† All trains on double and single lines are telegraphed from station to station during the hours the telegraph offices are open.

[illegible]

OF OTHER RAILWAYS WORKED BY THEM.
 the Head applicable, each Main Line or Portion of Main Line or Branch Line so worked.)

WORKED BY TELEGRAPH.					Single Lines of Railway (not included in the foregoing Columns), (1.) Worked under the System in which only One Engine in Steam or Two or more Engines coupled together are allowed to be upon the Single Line or portions thereof at one and the same time; or (2.) Worked under the Train Porter System; or (3.) Worked under the Train Staff System.						REMARKS.		
Not on either of the foregoing Systems.					From	To	Distance of						
From	To	Dis- tance of Double Line.	Distance of Single Line.				System as above. (1.)	Train Porter System. (2.)	Train Staff System. (3.)				
			Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.					With Tickets.	With- out Ticket.			
												Length of the Portions of Company's Railways and of other Railways worked by them for Goods and Mineral Traffic only.	
Worked on the System of telegraphing for- ward from one Tele- graph Station to the next, the departure of the trains.					m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.		
					—	—	—	—	29 53	—	—		
									7 33				
									51 34				
									—	9 36			
									24 65				
									—				
									60 74				
									20 32				
									17 71				
									12 12				
									12 34				
									—	—	0 16		
									—	—	0 60		
									7 3	—	237 8	9 36	0 76
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* Carrying a train staff.

S U M M A R Y.

NAME OF RAILWAY COMPANY.	Total Length of Railway open for Passenger Traffic.		Distance worked by Telegraph.					Distance worked by Telegraph, but not on either of the foregoing Systems.			Distance of Single Lines (not included in the foregoing Columns) worked under the following Systems					
	Double.	Single.	Absolute Block.			Per- missive Block. Double.	Double.	Distance of Single Line.		System in which only One Engine in Steam or Two or more Engines coupled together are allowed to be upon Line or Portions thereof at one and the same Time. (No. 1.)	Train Porter System. (No. 2.)	Train Staff System. (No. 3.)				
			Double.	Worked by the Train Staff System in addi- tion.	Worked <i>without</i> the Train Staff System.			Worked on Elec- trical Train Staff or Tablet System.	Worked by the Train Staff System in addi- tion.			Worked <i>without</i> the Train Staff System.	<i>With</i> Tickets.	<i>With- out</i> Ticke-		
ENGLAND AND WALES.																
AYLESBURY AND BUCKINGHAM -	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.
BISHOP'S CASTLE - - -	-	12 33	-	-	-	-	-	-	-	-	-	-	-	-	-	12 3
BRECON AND MERTHYR TYDFIL JUNCTION.	-	9 57	-	-	-	-	-	-	-	-	-	9 57	-	-	-	-
BRISTOL PORT RAILWAY AND PIER.	11 32	47 39	11 32	13 6	32 77	-	-	-	-	-	-	-	-	-	1 36	-
CAMBRIAN - - -	-	5 61	-	3 0	-	-	-	-	-	-	-	2 61	-	-	-	-
CENTRAL WALES AND CARMAR- THEN JUNCTION.	8 56	216 72	8 56	193 34	-	8 29	-	-	-	-	-	3 55	0 35	10 79	-	-
CHARNOOD FOREST - -	-	13 25	-	-	13 25	-	-	-	-	-	-	-	-	-	-	-
CHESHIRE LINES COMMITTEE -	-	10 0	-	10 0	-	-	-	-	-	-	-	-	-	-	-	-
CLEATOR AND WORKINGTON JUNC.	116 1	3 70	116 1	3 70	-	-	-	-	-	-	-	-	-	-	-	-
COCKERMOUTH, KESWICK, AND PENRITH.	11 15	12 73	11 15	6 43	-	6 30	-	-	-	-	-	-	-	-	-	-
COLNE VALLEY AND HALSTEAD -	-	31 14	-	18 12	-	13 2	-	-	-	-	-	-	-	-	-	-
CORRIS - - -	-	19 0	-	-	-	-	-	-	-	-	-	-	-	19 0	-	-
DOVER AND DEAL - - -	-	6 40	-	-	-	-	-	-	-	-	-	6 40	-	-	-	-
EAST AND WEST JUNCTION - -	8 28	-	8 28	-	-	-	-	-	-	-	-	-	-	-	-	-
EASTERN AND MIDLANDS - -	-	40 68	-	40 68	-	-	-	-	-	-	-	-	-	-	-	-
FESTINIOG - - -	6 44	102 69	6 44	16 59	-	86 10	-	-	-	-	-	-	-	-	-	-
FURNESS - - -	-	13 20	-	3 40	-	-	-	-	-	-	-	-	-	9 60	-	-
GARSTANG AND KNOT END - -	72 45	34 78	72 6	33 54	-	1 1	-	0 39	-	0 23	-	-	-	-	-	-
GREAT EASTERN - - -	-	7 0	-	-	-	-	-	-	-	-	-	7 0	-	-	-	-
GREAT NORTHERN - - -	521 37	506 68	521 37	395 33	-	-	-	-	-	-	-	-	-	111 35	-	-
GREAT NORTHERN AND GREAT EASTERN JOINT.	576 24	178 44	575 68	117 32	-	-	-	0 35	48 57	-	-	-	-	12 35	-	-
GREAT NORTHERN AND LONDON AND NORTH-WESTERN.	111 9	5 40	111 9	5 40	-	-	-	-	-	-	-	-	-	-	-	-
GREAT WESTERN - - -	22 75	-	22 75	-	-	-	-	-	-	-	-	-	-	-	-	-
HAMMERSMITH AND CITY - -	1,075 36	1,160 2	1034 52	803 39	178 36	-	0 67	5 4	-	-	-	89 32	-	75 58	-	-
HULL, BARNSLEY, AND WEST RIDING JUNCTION.	2 77	-	2 77	-	-	-	-	-	-	-	-	-	-	-	-	-
ISLE OF WIGHT - - -	59 6	-	59 6	-	-	-	-	-	-	-	-	-	-	-	-	-
ISLE OF WIGHT CENTRAL - -	1 0	13 8	1 0	4 25	-	-	-	-	-	-	-	-	-	6 2	2 6	-
LANCASHIRE AND YORKSHIRE -	-	33 60	-	20 40	-	-	-	-	-	-	-	-	-	13 20	-	-
LANCASHIRE AND YORKSHIRE AND LONDON AND NORTH- WESTERN JOINT LINES.	455 14	16 19	455 14	9 25	-	-	-	-	-	-	-	-	-	6 74	-	-
LISKEARD AND CARADON - -	56 2	7 74	56 2	-	-	-	-	-	-	-	-	-	-	7 74	-	-
LONDON AND NORTH-WESTERN -	-	6 74	-	-	-	-	-	-	-	-	-	6 74	-	-	-	-
LONDON AND NORTH-WESTERN AND GREAT WESTERN JOINT.	1,406 66	308 1	1406 66	277 72	15 20	8 40	-	-	-	-	-	4 75	-	1 34	-	-
LONDON AND NORTH-WESTERN AND MIDLAND JOINT.	111 63	45 61	111 63	44 30	-	-	-	-	-	-	-	0 67	-	-	0 4	-
LONDON AND SOUTH-WESTERN -	19 50	6 10	19 50	6 10	-	-	-	-	-	-	-	-	-	-	-	-
LONDON, BRIGFTON, AND SOUTH COAST.	599 35	223 71	599 35	163 21	38 50	22 0	-	-	-	-	-	-	-	-	-	-
LONDON, CHATHAM, AND DOVER	340 0	121 20	340 0	121 20	-	-	-	-	-	-	-	-	-	-	-	-
LONDON, CHATHAM, AND DOVER	175 7	10 22	175 7	10 22	-	-	-	-	-	-	-	-	-	-	-	-
LONDON, CHATHAM, AND DOVER	6 0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LONDON, CHATHAM, AND DOVER	64 21	3 67	64 5	-	-	-	-	0 16	3 67	-	-	-	-	-	-	-
LONDON, CHATHAM, AND DOVER	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LONDON, CHATHAM, AND DOVER	10 42	-	10 42	-	-	-	-	-	-	-	-	-	-	-	-	-
LONDON, CHATHAM, AND DOVER	-	41 43	-	-	-	-	-	-	-	-	-	-	-	41 43	-	-

SUMMARY—continued.

NAME OF RAILWAY COMPANY.	Total Length of Railway open for Passenger Traffic.		Distance worked by Telegraph.					Distance worked by Telegraph, but not on either of the foregoing Systems.			Distance of Single Lines (not included in the foregoing Columns) worked under the following Systems.			
			Absolute Block.			Per- missive Block. Double.	Distance of Single Line.		Double.	Distance of Single Line.		System in which only One Engine in Steam or Two or more Engines coupled together are allowed to be upon Line or Portions thereof at one and the same Time. (No. 1.)	Train Porter System. (No. 2.)	Train Staff System. (No. 3.)
	Double.	Single.	Double.	Distance of Single Line.			Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.		With Tickets.	With- out Ticket.			
				Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.	Worked on Elec- trical Train Staff or Tablet System.								
ENGLAND AND WALES—continued.														
MANCHESTER, SHEFFIELD, AND LINCOLNSHIRE.	m. ch. 268 35	m. ch. 3 40	m. ch. 239 78	m. ch. —	m. ch. —	m. ch. —	m. ch. —	m. ch. 26 31	m. ch. —	m. ch. —	m. ch. —	m. ch. —	m. ch. 3 40	m. ch. —
MANCHESTER SOUTH JUNCTION AND ALTRINCHAM.	9 20	—	8 12	—	—	—	1 8	—	—	—	—	—	—	—
MARTPORT AND CARLISLE -	27 73	13 34	0 73	—	—	—	—	—	—	—	—	—	13 34	—
MAWDDWY - - -	—	6 60	—	—	—	—	—	—	—	—	6 60	—	—	—
MERSEY - - - -	3 22	—	3 22	—	—	—	—	—	—	—	—	—	—	—
METROPOLITAN - - -	31 24	4 4	31 24	—	—	4 4	—	—	—	—	—	—	—	—
METROPOLITAN DISTRICT AND ME- TROPOLITAN AND DISTRICT JOINT.	19 73	1 43½	19 73	1 43½	—	—	—	—	—	—	—	—	—	—
MIDLAND - - - -	1,023 25	247 27	986 7	161 37	—	16 23	—	9 76	4 40	—	—	0 32	24 76	39 59
MIDLAND AND NORTH-EASTERN -	25 48	—	25 48	—	—	—	—	—	—	—	—	—	—	—
MIDLAND AND SOUTH-WESTERN JUNCTION.	0 60	41 49	0 60	41 49	—	—	—	—	—	—	—	—	—	—
NEATH AND BRECON (Neath Br.)	—	40 22	—	40 22	—	—	—	—	—	—	—	—	—	—
NORTHAMPTON AND BANBURY JUNCTION.	0 49	14 37	0 36	4 58	—	—	—	—	—	—	—	—	9 72	—
NORTH AND SOUTH-WESTERN JUNCTION.	3 14	1 46	3 14	1 23	0 23	—	—	—	—	—	—	—	—	—
NORTH-EASTERN - - -	928 62	479 33	924 7	465 69	0 17	—	—	4 55	—	—	13 27	—	—	—
NORTH LONDON - - -	11 78	—	11 78	—	—	—	—	—	—	—	—	—	—	—
NORTH STAFFORDSHIRE - - -	150 4	18 51	148 78	18 51	—	—	0 16	0 70	—	—	—	—	—	—
NORTH WALES (NARROW GAUGE)	—	11 70	—	—	—	—	—	—	—	—	11 70	—	—	—
OLDHAM, ASHTON-UNDER-LYNE, AND GUIDE BRIDGE JUNCTION.	5 64	—	5 64	—	—	—	—	—	—	—	—	—	—	—
PEMBROKE AND TENBY - - -	—	27 34	—	27 34	—	—	—	—	—	—	—	—	—	—
PONTYPRIDD, CAERPHILLY, AND NEWPORT.	5 11	—	5 11	—	—	—	—	—	—	—	—	—	—	—
RAVENGLASS AND ESKDALE -	—	7 11	—	—	—	—	—	—	—	—	7 11	—	—	—
RHONDDA AND SWANSEA BAY -	0 39	7 40	—	7 40	—	—	—	—	—	—	—	—	—	—
RHYMNEY - - - -	22 49	16 20	22 49	1 33	12 54	2 13	—	—	—	—	—	—	—	—
RHYMNEY AND GREAT WESTERN JOINT.	9 19	—	9 19	—	—	—	—	—	—	—	—	—	—	—
SEACOMBE, HOYLAKE, AND DEESIDE	4 16	6 6	4 16	6 6	—	—	—	—	—	—	—	—	—	—
SEVERN AND WYE AND SEVERN BRIDGE.	2 79	19 15	2 19	13 53	—	4 67	0 60	—	—	—	0 55	—	—	—
SHEFFIELD AND MIDLAND COM- MITTEE.	10 72	—	10 72	—	—	—	—	—	—	—	—	—	—	—
SOUTH-EASTERN - - -	365 67	41 65	365 67	41 60	—	—	—	—	—	—	0 5	—	—	—
SOUTH-WESTERN AND MIDLAND -	20 62	76 6	20 62	23 73	—	52 13	—	—	—	—	—	—	—	—
SOUTHWOLD - - - -	—	9 0	—	—	—	—	—	—	—	—	—	—	—	9 0
SWANSEA AND MUMBLES - - -	—	5 10	—	—	—	—	—	—	—	—	—	—	5 10	—
TAFF VALE - - - -	57 35	14 7	11 26	3 10	—	—	46 8	—	2 43	—	—	—	8 33	—
TALYLLYN - - - -	—	6 50	—	—	—	—	—	—	—	—	6 50	—	—	—
WEST LANCASHIRE - - -	23 61	—	23 61	—	—	—	—	—	—	—	—	—	—	—
WEST LONDON EXTENSION - -	5 8	—	5 8	—	—	—	—	—	—	—	—	—	—	—
WEST SOMERSET MINERAL - -	—	6 0	—	—	—	—	—	—	—	—	6 0	—	—	—
WREXHAM, MOLD, AND CONNAR'S QUAY.	7 42	5 36	7 42	3 30	—	—	—	—	—	—	—	—	2 6	—
TOTAL, ENGLAND AND WALES	8,895 76	4,409 59	8,700 71	3,185 46	291 62	224 72	48 79	48 6	59 47	0 23	184 19	0 67	391 27	64 37

SUMMARY—continued.

NAME OF RAILWAY COMPANY.	Total Length of Railway open for Passenger Traffic.		Distance worked by Telegraph.						Distance worked by Telegraph, but not on either of the foregoing Systems.			Distance of Single Lines (not included in the foregoing Columns) worked under the following Systems.				
			Absolute Block.			Per- missive Block. Single.	Distance of Single Line.			Distance of Single Line.			System in which only One Engine in Steam or Two or more Engines coupled together are allowed to be upon Line or Portions thereof at one and the same Time. (No. 1.)	Train Porter System. (No. 2.)	Train Staff System. (No. 3.)	
	Double.	Single.	Double.	Distance of Single Line.			Double.	Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.	With Tickets.	With- out Ticket.					
				Worked by the Train Staff System in addi- tion.	Worked without the Train Staff System.							Worked on Elec- trical Train Staff or Tablet System.				
SCOTLAND.																
AYRSHIRE AND WIGTOWNSHIRE -	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.	m. ch.
CALEDONIAN - - -	459 2	299 67	459 2	71 40	3 23	140 67	—	—	—	—	—	—	—	—	73 27	—
CITY OF GLASGOW UNION -	4 57	—	4 57	—	—	—	—	—	—	—	—	—	—	—	—	—
DUNDEE AND ARBROATH JOINT-	17 7	—	16 17	—	—	—	—	0 51	—	—	—	—	—	—	—	—
GLASGOW AND KILMARNOCK JOINT.	26 28	2 19	26 28	—	—	2 19	—	—	—	—	—	—	—	—	—	—
GLASGOW AND PAISLEY JOINT -	7 72	—	7 72	—	—	—	—	—	—	—	—	—	—	—	—	—
GLASGOW AND SOUTH-WESTERN	234 74	67 55	231 79	36 21	—	0 30	—	—	—	—	—	—	—	—	31 4	—
GREAT NORTH OF SCOTLAND -	31 50	281 42	31 50	—	250 37	25 24	—	—	—	—	—	5 61	—	—	—	—
HIGHLAND - - -	6 65	412 40	6 65	—	—	1 38	—	—	—	—	—	411 2	—	—	—	—
NORTH BRITISH - - -	420 20	476 29	420 20	57 64	50 43	56 4	25 64	—	—	—	—	—	1 10	285 4	—	—
PORTPATRICK AND WIGTOWNSHIRE	—	81 78	—	19 18	—	53 23	—	—	—	—	—	—	—	1 0	8 37	—
TOTAL, SCOTLAND - -	1,208 55	1,652 58	1,204 70	215 31	304 23	279 45	25 64	0 51	—	—	—	416 63	1 10	390 35	19 27	—
IRELAND.																
BALLYCASTLE - - -	—	16 20	—	16 20	—	—	—	—	—	—	—	—	—	—	—	—
DELFEST AND COUNTY DOWN -	7 0	60 60	7 0	5 40	—	—	—	—	55 20	—	—	—	—	—	—	—
BELFAST AND NORTHERN COUN- TIES.	33 20	212 18	33 20	108 37	—	—	—	—	—	—	—	10 25	—	93 36	—	—
CASTLEBERG AND VICTORIA BRIDGE.	—	7 0	—	—	—	—	—	—	—	—	—	7 0	—	—	—	—
CAVAN, LEITRIM, AND ROSCOMMON	—	48 39	—	33 62	—	—	—	—	—	—	—	14 57	—	—	—	—
CLOGHER VALLEY - - -	—	37 0	—	—	—	—	—	—	—	—	—	—	—	37 0	—	—
CORK AND MACROOM DIRECT -	—	24 60	—	—	—	—	—	—	—	—	—	—	—	24 60	—	—
CORK AND MUSKERRY - - -	—	18 0	—	—	—	—	—	—	—	—	—	—	—	18 0	—	—
CORK, BANDON, AND SOUTH COAST	—	84 44	—	—	—	—	—	—	—	—	—	36 4	—	48 40	—	—
CORK, BLACKROCK, AND PAS- SAGE.	—	6 37	—	6 37	—	—	—	—	—	—	—	—	—	—	—	—
DUBLIN, WICKLOW, AND WEX- FORD.	28 60	114 40	6 0	8 0	—	—	—	—	—	—	—	—	—	106 40	—	—
DUNDALK, NEWRY, AND GREENORE	—	26 77	—	26 77	—	—	—	—	—	—	—	—	—	—	—	—
FINN VALLEY - - -	—	13 18	—	—	—	—	—	—	—	—	—	13 18	—	—	—	—
GREAT NORTHERN OF IRELAND	137 16	382 37	18 40	18 18	—	—	—	—	—	—	—	23 79	—	341 45	0 49	—
GREAT SOUTHERN AND WESTERN OF IRELAND.	208 15	345 79	50 28	49 70	—	16 14	—	—	—	—	—	4 29	—	275 46	—	—
LONDONDERRY AND LOUGH SWILLY.	—	30 49	—	—	—	—	—	—	—	—	—	30 49	—	—	—	—
MIDLAND GREAT WESTERN -	154 57	276 70	85 6	23 23	—	—	—	69 51	—	—	—	7 3	—	237 8	9 36	—
SLIGO, LEITRIM, AND NORTHERN COUNTIES.	—	42 0	—	42 0	—	—	—	—	—	—	—	—	—	—	—	—
WATERFORD AND CENTRAL IRE- LAND.	—	66 15	—	—	—	—	—	—	—	—	—	—	—	59 32	6 63	—
WATERFORD AND LIMERICK -	31 60	252 20	10 0	76 40	—	—	—	21 60	—	—	—	—	—	175 60	—	—
WATERFORD AND TRAMORE -	—	7 20	—	—	—	—	—	—	—	—	—	7 20	—	—	—	—
WATERFORD, DUNGARVAN, AND LISMORE.	—	42 71	—	42 71	—	—	—	—	—	—	—	—	—	—	—	—
WEST CARBERRY - - -	—	14 20	—	—	—	—	—	—	—	—	—	14 20	—	—	—	—
WEST CLARE - - -	—	27 0	—	—	—	—	—	—	—	—	—	27 0	—	—	—	—
WEST DONEGAL - - -	—	18 0	—	—	—	—	—	—	—	—	—	18 0	—	—	—	—
TOTAL, IRELAND - -	600 68	2,175 74	210 14	458 15	—	16 14	—	91 31	55 20	—	—	213 64	—	1,417 47	16 68	—
TOTAL, UNITED KINGDOM -	10,705 39	8,238 31	10,115 75	3,859 12	596	5 520 51	74 63*	140 8	114 67	0 23	—	814 66	1 77	2,199 29	100 52	—

* 48 m. 79 ch. of which is double line.

COMPARATIVE STATEMENT showing the Number of Miles of Double Line open for Passenger Traffic, and the Distance thereof worked on the ABSOLUTE BLOCK SYSTEM, in the Years 1888 and 1889 respectively, on the following Railways :—

NAME OF COMPANY.	1888.		1889.		Per-centage of Double Line worked on Absolute Block System.		Per-centage Increase in 1889 over 1888.
	Length of Double Line open.	Distance worked on Absolute Block System.	Length of Double Line open.	Distance worked on Absolute Block System.	1888.	1889.	
ENGLAND AND WALES:							
BRECON AND MERTHYR - - -	miles. 11	miles. 11	miles. 11	miles. 11	} Cent.	} Cent.	}
CAMBRIAN - - - - -	9	9	9	9			
CHESHIRE LINES - - - - -	116	116	116	116			
CLEATOR AND WORKINGTON JUNCTION -	11	11	11	11			
DOVER AND DEAL - - - - -	8	8	8	8			
EASTERN AND MIDLANDS - - - - -	6½	6½	6½	6½			
FURNESS - - - - -	72½	72	72½	72			
GREAT EASTERN - - - - -	501	501	521	521			
GREAT NORTHERN - - - - -	572	572	576	576			
GREAT NORTHERN AND GREAT EASTERN -	111	111	111	111			
GREAT NORTHERN AND LONDON AND NORTH-WESTERN.	23	23	23	23	} Cent.	} Cent.	}
GREAT WESTERN - - - - -	1,074	1,003	1,075	1,035			
HAMMERSMITH AND CITY - - - - -	3	3	3	3			
HULL, BARNSLEY, AND WEST RIDING JUNCTION	59	59	59	59			
ISLE OF WIGHT - - - - -	1	1	1	1			
LANCASHIRE AND YORKSHIRE - - - - -	444	444	455	455			
LANCASHIRE AND YORKSHIRE AND LONDON AND NORTH-WESTERN JOINT LINES.	55	55	56	56			
LONDON AND NORTH-WESTERN - - - - -	1,402	1,401	1,407	1,407			
LONDON AND NORTH-WESTERN AND GREAT WESTERN JOINT.	112	112	112	112			
LONDON AND NORTH-WESTERN AND MIDLAND JOINT.	20	20	20	20			
LONDON AND SOUTH-WESTERN - - - - -	583	583	599	599	} Cent.	} Cent.	}
LONDON, BRIGHTON, AND SOUTH COAST -	339	339	340	340			
LONDON, CHATHAM, AND DOVER - - -	175	175	175	175			
LONDON, TILBURY, AND SOUTHEND - - -	64	64	64	64			
MACCLESFIELD COMMITTEE - - - - -	11	11	11	11			
MANCHESTER, SHEFFIELD, AND LINCOLNSHIRE -	268	239	268	240			
MANCHESTER SOUTH JUNCTION AND ALTRINGHAM	9	8	9	8			
MARYPORT AND CARLISLE - - - - -	28	1	28	1			
MERSEY - - - - -	3	3	3	3			
METROPOLITAN - - - - -	27	27	31	31			
METROPOLITAN DISTRICT - - - - -	20	20	20	20	} Cent.	} Cent.	}
MIDLAND - - - - -	1,014	977	1,023	986			
MIDLAND AND NORTH-EASTERN - - - - -	26	26	26	26			
NORTH AND SOUTH-WESTERN JUNCTION -	3	3	3	3			
NORTH-EASTERN - - - - -	930	924	929	924			
NORTH LONDON - - - - -	12	12	21	12			

NAME OF COMPANY.	1888.		1889.		Per-centage of Double Line worked on Absolute Block System.		Per-centage Increase in 1889 over 1888.
	Length of Double Line open.	Distance worked on Absolute Block System.	Length of Double Line open.	Distance worked on Absolute Block System.	1888.	1889.	
ENGLAND AND WALES—continued.							
NORTH STAFFORDSHIRE - - -	150	149	150	149	99	99	—
OLDHAM, ASHTON, AND GUIDE BRIDGE JUNCTION	6	6	6	6	} Cent.	} Cent.	—
RHYMNEY - - - - -	23	23	23	23			
RHYMNEY AND GREAT WESTERN JOINT - -	9	9	9	9			
SHEFFIELD AND MIDLAND COMMITTEE - -	11	11	11	11			
SOUTH-EASTERN - - - - -	348	348	366	366			
SOMERSET AND DORSET JOINT - - -	21	21	21	21	} Cent.	} Cent.	4
TAFF VALE - - - - -	54	8	57	11			
WEST LANCASHIRE - - - - -	24	24	24	24			
WEST LONDON EXTENSION - - -	5	5	5	5			
WREXHAM, MOLD, AND CONNAR'S QUAY -	7½	7½	7½	7½			
TOTAL, ENGLAND AND WALES - - -	8,802	8,572	8,896	8,701	97	98	1
SCOTLAND:							
CALEDONIAN - - - - -	455	451	459	459	99	100	1
CITY OF GLASGOW UNION - - - - -	4½	4½	5	5	Cent.	Cent.	—
DUNDEE AND ARBROATH - - - - -	17	16	17	16	94	94	—
GLASGOW AND KILMARNOCK - - - - -	24	24	26	26	} Cent.	} Cent.	—
GLASGOW AND PAISLEY - - - - -	8	8	8	8			
GLASGOW AND SOUTH-WESTERN - - -	233	230	235	232	99	99	—
GREAT NORTH OF SCOTLAND - - - -	32	32	32	32	} Cent.	} Cent.	—
HIGHLAND - - - - -	7	7	7	7			
NORTH BRITISH - - - - -	413	413	420	420			
TOTAL, SCOTLAND - - - - -	1,192½	1,185	1,209	1,205	99	100	1
IRELAND:							
BELFAST AND COUNTY DOWN - - -	—	—	7	7	—	100	—
BELFAST AND NORTHERN COUNTIES - -	33	33	33	33	Cent.	Cent.	—
DUBLIN, WICKLOW, AND WEXFORD - -	29	2	29	6	7	21	14
GREAT NORTHERN (IRELAND) - - -	137	18½	137	18½	14	14	Nil.
GREAT SOUTHERN AND WESTERN - - -	208	50	208	50	24	24	—
MIDLAND GREAT WESTERN - - - -	149	70	155	85	48	55	7
WATERFORD AND LIMERICK - - - -	32	10	32	10	31	31	Nil.
&c.							
TOTAL, IRELAND - - - - -	592½	184	601	210	31	35	4
TOTAL, UNITED KINGDOM - - - -	10,587	9,941	10,705	10,116	94	94.5	.5

APPENDIX.

STATEMENTS received from RAILWAY COMPANIES in reply to a request from the BOARD of TRADE for information as to the PROGRESS which has been made during the year 1889 in BLOCK WORKING and SIGNAL ARRANGEMENTS, distinguishing the WORK PERFORMED on lines which have been opened for Passenger Traffic during the past year from that EXECUTED on lines which were open for traffic on the 1st January 1889, and the EXTENT of the WORK of the same kind which it is intended to undertake during the year 1890.

GREAT WESTERN RAILWAY.

STATEMENT of the PROGRESS which has been made by this COMPANY during the year 1889 in BLOCK WORKING and SIGNAL ARRANGEMENTS.

Block Working.

The Block Telegraph has been introduced on the under-mentioned line which has been opened for passenger traffic during the year 1889.

	Miles.	Chains.
Kemble to Tetbury - - -	7	19

The work which has been executed on lines that were open for traffic on January 1st, 1889, is as under—

	Miles.	Chains.
Bath Road Bridge, Slough, to Windsor - - -	2	37
Reading West Fork - - -	0	46
Southcote Junction to Newbury -	15	27
Bridgend to Tondû - - -	2	23
Audlem to Nantwich - - -	5	33
Hereford, Barrs Court Junction, to Hereford, Barton - - -	1	8
Neath to Resolven - - -	5	44
	<u>32</u>	<u>58</u>

In addition to the above, the block telegraph is being introduced on the following sections:—

	Miles.	Chains.
Southcote to Basingstoke - - -	15	29
Basingstoke to London and South-Western Railway - - -	0	6
Tondû to Maesteg - - -	6	7
Brynmenin to Nantymoel - - -	6	70
Tondû to Brynmenin - - -	0	73
	<u>29</u>	<u>25</u>

Signal Arrangements.

The following stations on lines opened for passenger traffic during the year 1889 have been locked:—

Pontycwmmer, Culkerton, and Tetbury.

The following places on lines which were open for traffic on January 1st 1889, have been locked:—

Windsor, Mortimer, Bramley Siding, Iver Ballast Siding, Bickleigh Siding, Ashburton Junction, Gloucester, Ross, Audlem, Crumlin, Tredegar Junction, Maescywmmer Junction, Aberdylais, Shacklesford Siding, Penpergwm, St. Fagans West Junction, Peterston, Braichycwmmer.

In addition to the above the under-mentioned places are being or have been ordered to be locked:—

Paignton, Hungerford, Kintbury, Basingstoke, Old Milford, Rhymney Junction, Hirwain Pond, Cwm Back Siding, Bird-in-Hand Sidings, Gelly Tarw, Middle Duffryn, Lower Duffryn, Resolven, Rhondda Mountain, Penrhiew Siding, Blaendare, Cwm Glyn, Pontypool (Clarence Street), Bridgend, Llangonoyd, Troedrhiewgarth, Ynisawdre Junction, Brynmenyn, Blackmill, Caardiff and Ogmore Junction, Tynewydd, Nantymoel, Brogden's Siding, and Velin Vach Crossing.

When the foregoing works have been carried out, it is proposed to proceed with the locking and, where necessary, the block telegraph upon the under-mentioned sections of the line, viz., between—

Maidenhead and Kennington Junction.
Princes Risboro' and Aylesbury.
Hatton and Honeybourne.
Wellington and Market Drayton.
Gloucester, Ross, and Hereford.
Pontypool, Hereford, and Malvern Wells.
Newport and Blaenavon.
Pantyffynon and Brynamman.
Tresavean Junction, Redruth Station and Junction, and Bassett Level Crossing.

LANCASHIRE AND YORKSHIRE RAILWAY.

The Secretary states that during the past year block working has been instituted for controlling the fast trains between Windsor Bridge Junction and Hindley Junction and for the connecting lines Hindley to Pemberton, and Dobbs Brow Junction to Dicconson Lane Junction (Westhoughton connecting line).

Also that in addition to what is shown on the returns, 105 sets of electric apparatus have been fixed to repeat electrically the action of the signal arms at various places on the line; also 18 additional telephones have been fixed during the past year, to facilitate the working of the traffic.

LONDON AND NORTH-WESTERN RAILWAY.

COMPARATIVE STATEMENT between Years 1888 and 1889, showing INCREASE or DECREASE in the Year 1889.

YEAR, &c.	Number of Cases in which any Passenger Line is connected with or crossed on the Level by:—				Number of Cases in which the usual requirements of the Inspecting Officers of the Board of Trade have or have not been complied with in the following respects:—						REMARKS.
	Any other Pas- senger Line.	Any Goods Line.	Any Siding.	Any Cross- over Road.	Concen- tration of Signal and Point Levers.		Interlocking of Signal and Point Levers.		Addition of Safety Points in case of Goods Lines and Sidings.		
					Have.	Have not.	Have.	Have not.	Have.	Have not.	
1888.											
Main lines - -	337	176	1,203	469	2,175	10	2,175	10	1,374	5	
Branch lines - -	249	146	1,231	341	1,852	115	1,852	115	1,347	30	
	586	322	2,434	810	4,027	125	4,027	125	2,721	35	
	4,152				4,152		4,152		2,756		
	2,756										
1889.											
Main lines - -	344	178	1,192	467	2,171	10	2,171	10	1,366	4	
Branch lines - -	261	141	1,237	349	1,929	49	1,929	49	1,356	22	
	595	319	2,429	816	4,100	59	4,100	59	2,722	26	
	4,159				4,159		4,159		2,748		
	2,748										
Decrease in 1889 - -	—	3	5	—	—	66	—	66	—	9	
Increase in 1889 - -	9	—	—	6	73	—	73	—	—	—	

ADDITIONAL CONNECTIONS in consequence of NEW LINES and WIDENINGS opened in 1889.

Heaton Norris and Denton Junction Widening.	2	—	—	3	5	—	5	—	—	—	Stockport and Guide Bridge Railway.—Three previously-existing goods line connexions and two siding connexions dispensed with.
Harborne Junction and Winson Green Widening.	1	—	—	—	1	—	1	—	—	—	Stour Valley Railway.
Golcar and Marsden Widening (to Rotcher Lane Junction).	—	—	—	2	2	—	2	—	—	—	Huddersfield and Manchester Railway.—One previously-existing goods line connexion and one siding connexion dispensed with.
Springs Branch and Gamfurlong Junction Widening.	3	2	—	—	5	—	5	—	2	—	North Union Railway.—Two previously-existing cross-over roads dispensed with.
Workington Widening	—	2	—	—	2	—	2	—	2	—	Whitehaven Junction Railway.—Seven previously-existing siding connexions dispensed with.
	6	4	—	5	15	—	15	—	4	—	

These figures are included in the general return totals.

RETURN showing the MILEAGE of LINES and PORTIONS of LINES upon which the ABSOLUTE BLOCK SYSTEM has been brought into operation during the Year 1889.

Total additional Mileage worked upon Absolute Block System on 31st December 1889.				Name of Railway or Branch.	Portion of aforesaid Railway or Branch on which Absolute Block System has been introduced during 1889.		Distance of Double Line.	Distance of Single Line.	System or Systems in Operation during 1888.
Double.	Single.								
Miles.	Chains.	Miles.	Chains.		From	To	m. ch.	m. ch.	
7	61	4	28	Weedon and Daventry.	Weedon -	Daventry -	—	4 0	New line opened in 1888, but inadvertently omitted in 1888 Return.
				Stour Valley - -	Soho East Junction.	Harborne Jn. -	0 21	—	New line opened in 1889.
				Stockport and Guide Bridge.	Heaton Norris (Temporary Junction).	Denton Jn. -	4 22	—	Two additional lines opened in 1889.
				Huddersfield and Manchester.	Golcar - -	Rotcher Lane Junction.	2 1	—	Do.
				Lancashire Union -	Bamfurlong Jn.	Amberswood Junction, W. E. & L.	1 17	—	Previously used for goods traffic only. Line opened for passenger traffic in 1889.
				Dundalk, Newry, and Greenore.	Dundalk (Quay Street).	Dundalk (Barrack Street).	—	0 28	Line brought into use for passenger traffic in 1889.
				Total additional mileage brought under absolute block system in 1889 -			7 61	4 28	
				Note.—The mileage brought under the absolute block system in 1889 was - - -			7 70	—	

MARYPORT AND CARLISLE RAILWAY.

PROPOSED IMPROVED SIGNAL and BLOCK WORKING ARRANGEMENTS to be carried out during the Year 1890.

It is intended to fit up interlocking signals at Mealsgate, Baggrow, High Blaithwaite, Dearham, and Papcastle stations.

It is also intended to carry out arrangements for the adoption of the absolute block system on the main line and the tablet system on the branches.

NORTH-EASTERN RAILWAY.

PROPOSED WORK in connexion with BLOCK WORKING and SIGNAL ARRANGEMENTS.

The interlocking of points and signals and the absolute block system are in operation upon almost the whole of the lines belonging to and worked by the Company,

over which passenger trains run, and these systems may be introduced upon other parts of the line used for passenger traffic where they are not now in operation.

STATEMENT of the PROGRESS made in INTERLOCKING, &c. during the Year 1889.

	Number of Cases in which any Passenger Line is connected with or crossed on the Level by :				Number of Cases in which Arrangements as under have been provided and have not been provided.					
	Any other Passenger Line.	Any Goods Line.	Any Siding.	Any Cross-over Road.	Concentration of Signal and Point Levers.		Interlocking of Signal and Point Levers.		Addition of Safety Points in case of any Goods Lines and Sidings.	
					Have been provided.	Have not been provided.	Have been provided.	Have not been provided.	Have been provided.	Have not been provided.
Alterations and Additions to Old Lines.	—	—	36	6	21	—	21	—	16	—
New Lines - - -	—	—	—	—	—	—	—	—	—	—
Total - - -	—	—	36	6	21	—	21	—	16	—

STATEMENT of PROGRESS made in BLOCK WORKING during the year ending December 31st, 1889.

Block working shown December 31st, 1888		Miles.	Chains.
		1,417	9
Alterations on old lines:			
Block working introduced between Albert Hill Junction and Park Gate Junction.		0	27
		1,417	36
Deduct corrections:			
Thinford Junction—Thrillington (now only used for goods traffic)		0	48
Barnard Castle to Tees Valley Junction (shown twice by mistake)		1	7
		1	55
Block working as shown December 31st, 1889		1,415	61

TAFF VALE RAILWAY.

STATEMENT to the BOARD of TRADE of the progress made during the year 1889 in BLOCK TELEGRAPH and SIGNAL ARRANGEMENTS and the work proposed to be done during the current year.

Block Telegraph.

The whole of the Company's system, with the exception of the portion of single line worked under the Train Staff system, is provided with Block Telegraph.

Signals.

The whole of the Company's system where regular passenger trains are run is interlocked. One junction only over which occasional special train are run remains to be interlocked.

CALEDONIAN RAILWAY.

STATEMENT of the PROGRESS of BLOCK WORKING and SIGNAL ARRANGEMENTS on LINES belonging to or worked by the COMPANY during the year to 31st December 1889, viz.:—

BLOCK WORKING.

Railways.	On Lines already open for Passenger Traffic on 1st January 1889.		On Lines opened for Passenger Traffic during 1889.	
	Consisting of Two or more Lines of Railway.	Consisting of a Single Line of Railway.	Consisting of Two or more Lines of Railway.	Consisting of a Single Line of Railway.
	Miles.	Miles.	Miles.	Miles.
Caledonian	3½	5	3½	—
Callander and Oban	—	—	—	—
Killin	—	—	—	—
Catcart District	—	—	—	—
Lanarkshire and Ayrshire	—	—	1	3½

SIGNAL ARRANGEMENTS.

Railways.	On Lines already open for Passenger Traffic on 1st January 1889.			On Lines opened for Passenger Traffic during 1889.		
	Concentration of Signal and Point Levers.	Interlocking of Signal and Point Levers.	Addition of Safety Points in case of Goods Lines and Sidings.	Concentration of Signal and Point Levers.	Interlocking of Signal and Point Levers.	Addition of Safety Points in case of Goods Lines and Sidings.
	No. of Cases.	No. of Cases.	No. of Cases.	No. of Cases.	No. of Cases.	No. of Cases.
Caledonian	6	6	2	14	14	7
Callander and Oban	—	—	—	—	—	—
Killin	—	—	—	—	—	—
Catcart District	—	—	—	—	—	—
Lanarkshire and Ayrshire	—	—	—	—	—	—

GLASGOW AND KILMARNOCK JOINT.

The Beith Branch, hitherto a single line throughout from Lugton Junction to Beith, has, during the year 1889, been converted into a double line from Lugton Junction on the main line to Barrmill Junction (of the L. and A. Railway) with the joint line. The latter has

been converted from a junction of a double with a single line to a junction of two double lines. The alteration has not necessitated any addition to, or alteration of the details under the several headings, as returned for 1888.

NORTH BRITISH RAILWAY.

NEW BLOCK TELEGRAPHS complete or in progress, but not in practical operation.

		Distance of Double Line.	Distance of Single Line.
From	To	m. ch.	m. ch.
Portobello - - -	Seafeld Junction - -	—	1 76
Drem Junction - - -	North Berwick - - -	—	4 60
Reston Junction - - -	Ravenswood Junction - -	—	29 26
Longniddry Junction - -	Haddington - - -	—	4 60
Hawthornden Junction - -	Leadburn Junction - - -	—	6 20
Peebles Caledonian Junction	Kilnknowe Junction - - -	—	17 35
Bo'ness - - -	Kinniel - - -	—	0 64
Leuchars South Junction - -	St. Andrews (Links) - -	—	4 57
Polmont Junction - - -	Polmont Station - - -	0 17	—
Total - - -		0 17	69 78

LIST of NEW STATIONS at which improved SIGNALLING ARRANGEMENTS have been brought into use during Year 1889.

Nil.

NEW SIDINGS provided with LOCKING FRAMES and SIGNALS in conformity with Board of Trade requirements during Year 1889.

Garnqueen South. Rough Castle.	Todhills. Wallyford.
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STATIONS, SIDINGS, &c. at which SIGNALLING ARRANGEMENTS have been altered and improved during the Year 1889.

Caldercruix. Charlestown Junction. Dundee East. Dunfermline Lower. East Linton. Forrestfield. Inverkeithing.	Jamestown. Kershopefoot. Moat Quarry. Peebles. Penton. Plains. Redding.	Reedsmouth. Sauchie Colliery. Scotch Dyke. Selkirk Junction. Shettleston. Westraigs. Whitem's.
--	---	--

STATIONS, &c. at which improved SIGNALLING ARRANGEMENTS are intended to be made during the Year 1890.

Abbotsford Ferry. Auchincrow. Asylum Siding. Ayton. Billiemains. Blairadam. Bo'ness. Burntisland. Bridge of Earn. Broomieknowe. Broomlee. Cardrona. Chirnside. Clovenfords. Corstorphine. Crimstane. Dalmeny. Dirleton. Dolphinton.	Duns. Earlston. Eddleston. Edrom. Fans Loanend. Gordon. Greenlaw. Haddington. Innerleithen. Inverkeithing. Jedburgh. Jedfoot. Kelty. Kevoek Mill. Kinneil. Kinross Junction. Kirkbank. Lamancha. Lasswade.	Leadburn. Lindean. Lintmill. Loch Leven. Macbiehill. Marchmont. Mawcarse. Milnathort. Nisbet. North Berwick. Pomathorn. Polton. Rosslynlee. Selkirk. Thornielee. Trotter's Siding. Walkerburn.
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BELFAST AND NORTHERN COUNTIES RAILWAY.

During 1889 the line between Ballymena and Parkmore was placed under the absolute block system of working. It is proposed to immediately establish block working on all portions of the system (including worked lines) where it has not hitherto operated.

STATEMENT of PROGRESS which has been made by this COMPANY in SIGNAL ARRANGEMENTS during the year 1889.

Derry Station and Yard.

Although the re-signalling of this station was not completed at the end of the year 1889, and consequently does not appear under the new arrangement in the Board of Trade return relative to connexions and crossings, it is now finished and in working order.

Under the old arrangement, the Board of Trade return, relative to connexions and crossings, was as follows:—

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>h</i>	<i>k</i>	<i>l</i>
1	-	3	1	2	3	2	3	-	3

The present arrangement is:—

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>h</i>	<i>k</i>	<i>l</i>
1	1	3	1	8	-	6	-	3	-

Devlin's Siding.

This is a lime siding on the Cookstown branch, which was put in during the year. The main line at this place is single. A proper facing points lock on main line, and trap switch on siding, together with all necessary signals, &c., have been provided. The siding has been

inspected and all the arrangements approved of by the Board of Trade inspector.

Ballast Pit Siding near Antrim Station.

A trap switch has been put on this siding.

High Level Line, Ballymena.

Formerly a goods line, it has now been opened for passenger traffic. The line starts with a junction with the Cushendall branch of this company at Ballymena passenger station, and terminates with a junction with the Ballymena and Larne branch of this company, outside of what was formerly the passenger station of the Ballymena and Larne Railway Company.

Being opened for passenger traffic necessitated considerable alterations to signals and connexions at both of the above named junctions, which alterations have been carried out by the company, and approved of by the Board of Trade inspector.

Work contemplated during 1890.

During the present year the company contemplate altering and re-signalling the following stations:—Ballycarry, Magheramorne, Glynn, Larne, Glarryford, Killagan, Portrush.

ACCOUNTS AND PAPERS:

1890.

FORTY-FOUR VOLUMES:—CONTENTS OF THE

TWENTY-FIFTH VOLUME.

N.B.—*THE* Figures at the beginning of the line, correspond with the N° at the foot of each Paper; and the Figures at the end of the line, refer to the MS. Paging of the Volumes arranged for The House of Commons.

RAILWAYS—continued.

Accidents :

- [c. 6155.] General Report to the Board of Trade upon Accidents which have occurred on the Railways of the United Kingdom during the Year 1889. p. 1
- [c. 6013.] Returns of Accidents and Casualties as reported to the Board of Trade by the several Railway Companies in the United Kingdom, during the Year ending 31st December 1889; together with Reports of the Inspecting Officers of the Railway Department to the Board of Trade upon certain Accidents which were inquired into. 35
- [c. 6062.] Similar Returns for the Three Months ending 31st March 1890. 225

Carlise (Citadel) Station Accident :

- [c. 6022.] Report to the Board of Trade into the Circumstances which attended the Accident that occurred on the 4th March 1890 at Carlisle (Citadel) Station. 281

Continuous Brakes :

- [c. 5996.] Return (in pursuance of the Railway Returns (Continuous Brakes) Act, 1878) by the Railway Companies of the United Kingdom for the Six Months ending the 31st December 1889. 307
- [c. 6156.] Similar Return for the Six Months ending the 30th June 1890. 437

Capital Traffic Working Expenditure, &c. :

- [c. 6157.] General Report to the Board of Trade in regard to the Share and Loan Capital, Traffic in Passengers and Goods, and the Working Expenditure and Net Profits from Railway Working of the Railway Companies of the United Kingdom for the Year 1889. 563

Railways Construction Facilities Act, 1864 :

272. Report by the Board of Trade on the Applications made during the Year 1889 under the Act, and of the Proceedings of the Board of Trade with respect thereto. 593

Forth Bridge Railway :

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COPY OF STATEMENTS

FURNISHED TO THE

BOARD OF TRADE

BY THE

RAILWAY COMPANIES HAVING TERMINI IN THE
METROPOLIS,

IN REPLY TO

A CIRCULAR LETTER REQUESTING INFORMATION FOR
THE USE OF THE LONDON COUNTY COUNCIL.

(In continuation of Major Marindin's Report of 24th February 1883 [C.—3535].)

Presented to both Houses of Parliament by Command of Her Majesty.



LONDON:

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1890.

[C.—6039.] Price 4d.

RAILWAYS (WORKMEN'S TRAINS ON THE METROPOLITAN LINES).

COPY of LETTER from LONDON COUNTY COUNCIL to BOARD OF TRADE.

London County Council,
Spring Gardens, S.W.,
13th December 1889.

SIR,

I AM directed by the Council to ask whether they may be furnished with a copy of the report made by Major Marindin on the subject of train service for the working classes for the suburbs of London, with additions, if any, which may have been made to date. If the facts are not brought up to date, I am further directed to ask whether the Board of Trade will complete the information required to indicate the actual present state of things.

I am, &c.,
(Signed) H. DE LA HOOKE,
Clerk of the Council.

The Secretary,
Board of Trade.

COPY of LETTER from BOARD OF TRADE to RAILWAY COMPANIES.

Board of Trade (Railway Department),
20th December 1889.

SIR,

I AM directed by the Board of Trade to transmit herewith, for the information of the directors of your company, copy of an application that this Board have received from the London County Council, seeking information in regard to the facilities at present afforded to the working classes by the various railway companies having termini in the metropolis.

I am at the same time to enclose a print of the report made to this Department by Major Marindin in February 1883 on the subject of workmen's trains on the metropolitan lines, and to ask that the Board of Trade may be furnished at your early convenience with a detailed statement, made up to the present date, and following as nearly as may be the arrangement in the report, giving the desired information so far as your company's railways are concerned.

I am, sir,
Your obedient servant,
(Signed) COURTENAY BOYLE.

To the secretary of the following railway companies:—

- | | |
|---------------------------------------|-------------------------------|
| 1. Great Eastern. | 7. Great Northern. |
| 2. London, Chatham, and Dover. | 8. Great Western. |
| 3. Metropolitan. | 9. London and North-Western. |
| 4. Metropolitan District. | 10. London and South-Western. |
| 5. North London. | 11. Midland. |
| 6. London, Brighton, and South Coast. | 12. South-Eastern. |

The statements furnished by the above-named railway companies, and by the London, Tilbury, and Southend Railway Company, are appended.

GREAT EASTERN RAILWAY COMPANY.

Statutory obligations. The statutory obligations of this Company are laid down in the usual terms in the following Special Acts, viz. :—

I.—*The Great Eastern Railway (Metropolitan Station and Railways) Act, 1864,* 27 & 28 Vict. cap. 313.

Section 80 requires that *one* train shall be run every morning from Edmonton and Walthamstow stations to Liverpool Street station, and *one* every evening from Liverpool Street station to Edmonton and Walthamstow stations, at such hours, not being later than seven in the morning, or earlier than six in the evening, as may be most convenient for artisans, &c., at fares not exceeding one penny per passenger for each journey, and stopping at all intermediate stations.

Section 81 empowers the Company to ascertain the rights of applicants for cheap tickets, and to refuse to issue such tickets for a less period than one week.

Section 82 provides for penalties for the abuse of tickets.

Section 83 limits the liability of the Company under any claim to compensation for injury or otherwise, in respect of passengers travelling with such tickets, to a sum not exceeding one hundred pounds.

Note.—*The terminal station at Walthamstow is New Street.*

II.—*The London, Blackwall, and Millwall Extension Railway Act, 1865,* 28 Vict. cap. 116.

Section 58 requires that *one* train shall be run every morning and *one* every evening upon the Extension Railway, or upon so much thereof as is used for passenger traffic, at such hours (not being later than eight in the morning or earlier than six in the evening) as may be most convenient for the labouring classes employed in the Isle of Dogs, and at fares not exceeding one penny per passenger for each journey; the liability of the Company in the case of injury or otherwise being limited to one hundred pounds.

III.—*The Great Eastern Railway (Additional Powers) Act, 1869, 32 & 33 Vict. cap. 89.*

Section 19 limits the compensation for injury to passengers carried at workmen's fares on any part of the railways of the Company.

IV.—*The Gaslight and Coke Company's Act, 1871, 34 & 35 Vict. cap. 75.*

Section 22 requires the Great Eastern Railway Company, during the time they work the railway authorised by the Act, to run *one* train every morning from Barking Road station to Beckton station, and *one* every evening from Beckton station to Barking Road station, at such hours, not being later than seven in the morning, or earlier than six in the evening, as may be most convenient for artisans, &c., at fares not exceeding one penny per passenger for each journey, and calling at all intermediate stations.

Section 23 empowers the Company to ascertain the rights of applicants for cheap tickets, and to refuse to issue such tickets for a less period than one week.

Section 24 provides for penalties for the abuse of tickets.

Section 25 limits the liability of the Company under any claim to compensation for injury or otherwise, in respect of passengers travelling with such tickets, to a sum not exceeding one hundred pounds.

Note.—*Barking Road station is now called Canning Town station.*

V.—*London and Saint Katherine Docks Act, 1882, 45 Vict. cap. 2.*

Section 23 requires that *one* train shall be run every morning upon the railway for the whole length calling at all intermediate stations at such hours, not being later than seven in the morning or earlier than six in the evening, as may be most convenient

for artisans, &c., at fares not exceeding one penny per passenger for each journey (in addition to the Government duty).

Section 24 limits the compensation for injury or otherwise to one hundred pounds.

The Company is running the following workmen's trains, viz. :—

Detail of
trains run-
ning.

From Wood Street and Enfield to London.

1. At 4.41 a.m. from Enfield Town, arriving at Hackney Downs at 5.11, Bethnal Green at 5.20, Liverpool Street 5.25.
2. At 5.0 a.m. from Wood Street, arriving at Hackney Downs at 5.16, Bethnal Green at 5.25, Liverpool Street 5.30.
3. At 4.53 a.m. from Enfield Town, arriving at Hackney Downs at 5.30, Bethnal Green at 5.39, Liverpool Street 5.44.
4. At 5.20 a.m. from Wood Street, arriving at Hackney Downs at 5.36, Bethnal Green at 5.45, Liverpool Street 5.50.
5. At 5.40 a.m. from Wood Street, arriving at Hackney Downs at 5.56, Bethnal Green at 6.5, Liverpool Street, 6.10.
6. At 5.47 a.m. from Wood Street, arriving at Hackney Downs at 6.2, Bethnal Green at 6.11, Liverpool Street 6.16.
7. At 5.34 a.m. from Enfield Town, arriving at Hackney Downs at 6.6, Bethnal Green at 6.15, Liverpool Street 6.20.
8. At 5.54 a.m. from Wood Street, arriving at Hackney Downs at 6.9, Bethnal Green at 6.18, Liverpool Street 6.23.
9. At 6.4 a.m. from St. James Street, arriving at Hackney Downs at 6.14, Bethnal Green at 6.22, Liverpool Street 6.27.
10. At 5.56 a.m. from Enfield Town, arriving at Hackney Downs at 6.21, Bethnal Green at 6.28, Liverpool Street 6.33.
11. At 6.3 a.m. from Enfield Town, arriving at Hackney Downs at 6.26, Bethnal Green at 6.34, Liverpool Street 6.40.
12. At 6.11 a.m. from Enfield Town, arriving at Hackney Downs at 6.32, Bethnal Green at 6.38, Liverpool Street 6.43.
13. At 6.21 a.m. from Lower Edmonton, arriving at Hackney Downs at 6.36, Bethnal Green 6.42, Liverpool Street 6.47.

Nos. 1, 2, 3, 4, 5, 6, and 7 stop at all intermediate stations.

No. 8 misses St. James Street.

No. 9 misses London Fields and Cambridge Heath.

No. 10 misses Edmonton, White Hart Lane, Seven Sisters, Stamford Hill, Stoke Newington, and London Fields.

No. 11 misses Bush Hill Park, Edmonton, Silver Street, Bruce Grove, Stamford Hill, Stoke Newington, Rectory Road, and Cambridge Heath.

No. 12 misses Bush Hill Park, Silver Street, Bruce Grove, Seven Sisters, Stamford Hill, Stoke Newington, Rectory Road, London Fields, and Cambridge Heath.

No. 13 misses Silver Street, Bruce Grove, Seven Sisters, Stamford Hill, Stoke Newington, Rectory Road, London Fields, and Cambridge Heath.

The tickets are issued to and from intermediate stations.

For the return journey the tickets are available on the day of issue by any train leaving Liverpool Street after 4.0 p.m., and on Saturdays after 12.0 noon.

From Stratford to London.

1. At 5.15 a.m. from Stratford Market, arriving at Bethnal Green at 5.28 a.m., and Liverpool Street 5.33 a.m.
2. At 5.30 a.m. from Stratford Central, arriving at Bethnal Green at 5.41 a.m., and Liverpool Street 5.46 a.m.
3. At 5.58 a.m. from Stratford Central, arriving at Bethnal Green at 6.8 a.m., and Liverpool Street 6.13 a.m.
4. At 6.14 a.m. from Stratford Central, arriving at Bethnal Green at 6.25 a.m., and Liverpool Street 6.30 a.m.
5. At 6.18 a.m. from Stratford Market, arriving at Bethnal Green at 6.31 a.m., and Liverpool Street 6.36 a.m.

These trains stop at all intermediate stations.

For the return journey the tickets are available on the day of issue to Stratford Market or Stratford by any train leaving Liverpool Street or Fenchurch Street after 4 p.m.; on Saturdays after 12 noon. To Coborn Road and Globe Road by any train leaving Liverpool Street for Coborn Road after these hours.

From Stratford Market to Canning Town, Woolwich, &c.

1. At 5.15 a.m. from Stratford Market, arriving at Canning Town 5.20, and North Woolwich 5.35 a.m.

2. At 4.43 p.m. from Stratford Market, arriving at Canning Town 4.48, and North Woolwich 5.0 p.m.

These trains stop at all intermediate stations.

For the return journey the tickets issued for the 5.15 a.m. train are available on the day of issue by any train leaving North Woolwich after 4 p.m., and on Saturdays after 12 noon; and those issued for the 4.43 p.m. train are available by the 6.20 a.m. train from North Woolwich on the following day.

From Stratford Market to Beckton.

1. At 5.20 a.m. from Stratford Market, due at Beckton at 5.42 a.m.

2. At 1.15 p.m. " " 1.34 p.m.

3. At 4.15 " " 4.32 "

4. At 9.15 " " 9.34 "

These trains stop at all intermediate stations.

For the return journey the tickets issued for the 5.20 a.m. and 1.15 p.m. trains are available on the day of issue only by any train leaving Beckton after 2.0 p.m., and on Saturdays after 12 noon. Those issued for the 4.15 and 9.15 p.m. trains are available by the 6.25 a.m. train from Beckton on the following day.

From Stratford Market to Royal Albert Dock.

1. At 6.28 a.m. from Stratford Market, arriving at Gallion's Station at 6.51 a.m.

2. At 6.36 " " " " 6.57 "

3. At 7.4 " " " " 7.23 "

4. At 7.32 " Canning Town " " 7.49 "

5. At 7.35 " Stratford Market " " 7.57 "

These trains stop at all intermediate stations.

South and North Woolwich.

Workmen's return tickets at three halfpence each are issued daily on week days by boat as under :—

From South Woolwich at 4.50, 5.10, 5.22, 5.50, 6.10, 6.25, and 6.40 a.m.

From North Woolwich at 5.0, 5.15, 5.38, 5.58, 6.18, 6.33, and 6.52 a.m.

These tickets are available for return on the day of issue only by any boat after 4 p.m., and on Saturdays after 12 noon.

Conditions
under which
cheap tickets
are issued.

Daily return tickets only are issued on all the above routes. They are issued without restriction to any person applying for them. On the lines upon which workmen's trains are obliged to be run by Act of Parliament, the tickets are issued subject to the provisions of the Act; upon the other parts of the line, where the running of such trains is voluntary, the tickets are issued on the express condition that the liability of the company for compensation for injury or otherwise is limited to 100%. Since the 1st October 1882 workmen's tickets have been issued between intermediate stations, which was not done before that date.

The tickets are available in third-class carriages only. There is no limit as to the amount of luggage which workmen are allowed to carry, and they use the luggage vans a good deal for their heavier packages.

The following are the fares and distances upon the sections of the line upon which the above trains are running :—

Fares and
distances.

Between Enfield and Wood Street and London.

The return fare is 2d. between any of the stations.

The distances from Liverpool Street are—

To Bishopsgate	-	-	-	-	$\frac{1}{2}$ mile.
„ Bethnal Green	-	-	-	-	$1\frac{1}{4}$ miles.
„ Cambridge Heath	-	-	-	-	2 „
„ London Fields	-	-	-	-	$2\frac{1}{2}$ „
„ Hackney Downs	-	-	-	-	3 „
„ Clapton	-	-	-	-	4 „
„ St. James' Street	-	-	-	-	$5\frac{3}{4}$ „
„ Hoe Street	-	-	-	-	$6\frac{1}{2}$ „
„ Wood Street	-	-	-	-	$7\frac{1}{4}$ „
„ Rectory Road	-	-	-	-	4 „
„ Stoke Newington	-	-	-	-	$4\frac{1}{4}$ „
„ Stamford Hill	-	-	-	-	5 „
„ Seven Sisters	-	-	-	-	$5\frac{3}{4}$ „
„ Bruce Grove	-	-	-	-	$6\frac{1}{2}$ „
„ White Hart Lane	-	-	-	-	$7\frac{1}{4}$ „
„ Silver Street	-	-	-	-	8 „
„ Edmonton	-	-	-	-	$8\frac{3}{4}$ „
„ Bush Hill Park	-	-	-	-	10 „
„ Enfield	-	-	-	-	$10\frac{3}{4}$ „

Between Stratford and London.

The return fare is 2d.

The distances from Liverpool Street are—

To Bishopsgate	-	-	-	-	$\frac{1}{2}$ mile.
„ Bethnal Green	-	-	-	-	$1\frac{1}{4}$ miles.
„ Coborn Road	-	-	-	-	$2\frac{1}{2}$ „
„ Stratford Market	-	-	-	-	$4\frac{1}{4}$ „
„ Stratford Central	-	-	-	-	4 „

Between Stratford Market, Canning Town, and North Woolwich.

The return fares are—

Stratford Market to Canning Town	-	-	-	-	2d.
„ „ Tidal Basin, Custom House, Silvertown, or North Woolwich	-	-	-	-	3d.
Canning Town or Tidal Basin to North Woolwich or inter- mediate stations	-	-	-	-	2d.

The distances from Stratford Market are—

To Canning Town	-	-	-	-	$1\frac{1}{2}$ miles.
„ Tidal Basin	-	-	-	-	$2\frac{1}{4}$ „
„ Custom House	-	-	-	-	$2\frac{3}{4}$ „
„ Silvertown	-	-	-	-	$3\frac{1}{2}$ „
„ North Woolwich	-	-	-	-	$4\frac{1}{2}$ „

Between Stratford Market and Beckton and Royal Albert Docks.

The return fares are—

Stratford Market to Beckton	-	-	-	-	3d.
Canning Town, Tidal Basin, and Custom House to Beckton	-	-	-	-	2d.

The distances from Stratford Market are—

To Canning Town	-	-	-	-	$1\frac{1}{2}$ miles.
„ Tidal Basin	-	-	-	-	$2\frac{1}{4}$ „
„ Custom House	-	-	-	-	$2\frac{3}{4}$ „
„ Beckton	-	-	-	-	$4\frac{3}{4}$ „

The Royal Albert Docks are two miles from Custom House, and the return fares to the docks are as follows:—

From Stratford Market	-	-	-	-	5d.
„ Canning Town	-	-	-	-	4d.
„ Tidal Basin	-	-	-	-	4d.
„ Custom House	-	-	-	-	2d.

Number
of tickets
issued.

The number of return workmen's tickets issued in November 1889 was 288,556, and in December 1889 it was 260,559, the smaller number in the latter month being due to the Christmas holidays.

The total number for the year 1889 was 3,527,312.

Make-up of
trains.

The following is the make-up of the trains:—

Enfield Line Trains.

Nos. 3, 10, 11, and 13 are ordinary trains, having five third-class carriages, two third-class breaks, with three first-class and five second-class carriages, and seating 300 third-class passengers.

Nos. 1, 7, and 12 are used for workmen only, Nos. 1 and 12 having eight third-class carriages, two third-class breaks, three second-class and two first-class carriages, and seating 450 third-class passengers; No. 7 having nine third-class carriages, two third-class breaks, three second-class and one first-class carriages, and seating 500 third-class passengers.

Walthamstow Trains.

Nos. 4, 5, 6, and 8 are ordinary trains, having five third-class carriages, two third-class breaks, with three first-class and five second-class carriages, and seating 300 third-class passengers.

Nos. 2 and 9 are used for workmen only, having 10 third-class carriages, two third-class breaks, two second-class and one first-class carriages, and seating 550 third-class passengers.

Stratford to London.

The 5.30 a.m. train consists of one first, four seconds, eight thirds, and two third-class breaks, and seats 450 third-class passengers.

The 5.58 a.m. train consists of two firsts, two seconds, six thirds, and two third-class breaks, and seats 330 third-class passengers.

The 6.14 a.m. train consists of two first, five seconds, six thirds, and two third-class breaks, and seats 350 third-class passengers.

A relieving train is run for several months in the year in front of the 5.30 a.m. train, which has accommodation for 350 third-class passengers.

Stratford Market and London.

The 5.15 and 6.18 a.m. are both ordinary trains, having six third-class carriages, and one third-class break, with two first and two second-class carriages, and seating 330 third-class passengers.

Stratford Market and Beckton.

The 5.20 a.m. train consists of 11 thirds, two third-class breaks, one second and one first class carriages, seating 600 third-class passengers.

The 1.15 and 9.15 p.m. trains consist of seven thirds, one third-class break, one second and one first class carriages, seating 380 third-class passengers.

The 4.15 p.m. train consists of nine thirds, one third-class break, one second and one first class carriages, seating 500 third-class passengers.

Stratford Market and Woolwich.

The same train runs in the morning and evening. It is an ordinary train with two first-class, two second-class, six third-class carriages, and two break-vans, and it seats 300 third-class passengers.

Millwall Railway.

Tickets are now issued on this line, at 2*d.* each for the return journey, to any station between Millwall Junction and North Greenwich by ordinary trains leaving North Greenwich at 5.7, 5.37, 6.7, and 6.37 a.m., and from Millwall Junction at 5.25, 5.55, 6.25, and 6.55 a.m., available for return by any train after 4 p.m., and on Saturdays after 12 noon.

Blackwall Line.

Twopenny return tickets are also issued from Blackwall to Fenchurch Street and intermediate stations by trains at 5.20, 5.35, 5.50, 6.5, 6.20, and 6.35 a.m. These tickets are also issued from intermediate stations, and are available for return after 4 p.m., and on Saturdays after 12 noon.

The Enfield Trains to London.

Upon the Enfield and Wood Street lines there are many more workmen booked in the summer than in winter, and in the summer many travel by the earlier trains who, in winter, travel by the later ones.

In the winter time the earlier trains are comparatively light.

The front carriages in many of the trains are frequently much overcrowded when there are plenty of vacant seats in the rear part of the train.

The traffic on the Royal Albert Dock trains varies very much according to the state of the tide and the amount of shipping in the docks. The trains are sometimes overcrowded, but the total third-class accommodation provided in the whole of the trains running is more than the total number of third-class passengers booked.

The workmen, being allowed to return by any train after a certain hour, suffer the same inconvenience as the ordinary third-class passengers on the return journey.

The workmen's trains are advertised by special posters, as well as in the time-table books, and on the stations bills.

The following is a summary of the workmen's trains run under statutory obligation, and also those actually run.

WORKMEN'S TRAINS.

Required by Act of Parliament.				Actually run.			
Between	No. of Trains per day each way.	Distance.		Between	No. of Trains per day.	Distance run.	
Edmonton and London - -	1	8 $\frac{3}{4}$		Enfield and London - - -	6	64 $\frac{1}{2}$	
Walthamstow and London - -	1	7		Edmonton and London - - -	1	8 $\frac{3}{4}$	
Canning Town and Beckton - -	1	3		Wood Street and London - -	5	35	
Custom House and Gallions (Albert Dock).	1	2		St. James' Street and London - -	1	5 $\frac{3}{4}$	
Millwall Junction and North Greenwich.	1	1 $\frac{1}{2}$		Stratford Market and London - -	2	8	
				Stratford and London - - -	3	12	
				Stratford Market and North Woolwich.	2	9 $\frac{1}{2}$	
				Stratford Market and Beckton - -	4	19	
				Stratford Market and Albert Dock -	4	20	
				Canning Town and Albert Dock -	1	3 $\frac{1}{4}$	
				Millwall Junction and North Greenwich.	8	12	
				Blackwall and London - - -	6	21	
				North and South Woolwich - -	6	Boat trips	
Total - - -	5	22$\frac{1}{4}$		Total - - -	49	218$\frac{3}{4}$	

In addition to the foregoing arrangements, Special Cheap *Third* class tickets for workmen are issued by any train due to arrive before 8.0 a.m. as under:
Required by Act of Parliament, None.

Actually run.	No. of Trains per Day.	Distance run.
Walthamstow :— Wood Street, Hoe Street, St. James' Street, Clapton, and Hackney Downs to London	5	35
Wood Green :— Palace Gates, Green Lanes and Noel Park, West Green, Seven Sisters, Stamford Hill, Stoke Newington, Rectory Road, Hackney Downs to London	1	7 $\frac{3}{4}$
Enfield Town :— Enfield Town, Bush Hill Park, Lower Edmonton, Silver Street, White Hart Lane, Bruce Grove, Seven Sisters, Stamford Hill, Stoke Newington, Rectory Road, Hackney Downs to London	4	43
Waltham Cross :— Waltham Cross, Enfield Lock, Brimsdown, Ponders End, Angel Road, Park, Tottenham, Lea Bridge to London	3	38 $\frac{1}{4}$
Stratford to London	5	20
South Woolwich :— South Woolwich, North Woolwich, Silvertown, Custom House, Tidal Basin, Canning Town to London	5	46 $\frac{1}{4}$
Liverpool Street, Bishopsgate, Bethnal Green, Cambridge Heath, London Fields, Hackney Downs, Clapton to Walthamstow	5	35
Liverpool Street, Bishopsgate, Bethnal Green, Cambridge Heath, London Fields, Hackney Downs, Rectory Road, Stoke Newington to Wood Green (Palace Gates)	1	7 $\frac{3}{4}$
Liverpool Street, Bishopsgate, Bethnal Green, Cambridge Heath, London Fields, Hackney Downs, Rectory Road, Stoke Newington, Stamford Hill, Seven Sisters, Bruce Grove, White Hart Lane to Enfield Town	6	64 $\frac{1}{4}$
Liverpool Street, Bishopsgate, Bethnal Green, Globe Road, Coborn Road, Stratford, Lea Bridge, Tottenham, Park, Angel Road, Ponders End	4	51
Enfield and Wood Green to Woolwich :— Enfield Town, Bush Hill Park, Lower Edmonton, Silver Street, White Hart Lane, Bruce Grove, Seven Sisters, Palace Gates—Wood Green, Green Lanes and Noel Park, West Green	1	17 $\frac{3}{4}$
Total	40	366 $\frac{1}{4}$

These tickets are also issued to and from intermediate stations.

These tickets are available for return by any train on the day of issue.

The fares charged are one half the ordinary third-class return fares with a minimum of 4*d.*

LONDON, CHATHAM, AND DOVER RAILWAY COMPANY.

Statutory obligations. The statutory obligations of this Company, prior to those which may result from the powers conferred on the Board of Trade by the Cheap Trains Act of 1883, 46 & 47 Vict., cap. 34, are laid down in the usual terms in the following Act, viz.:—*The London, Chatham, and Dover Railway (New Lines) Act, 1864, 27 & 28 Vict. cap. 195.*

Section 134 requires that one train shall be run every morning from Loughborough Park and Peckham Junction stations to Ludgate station, and one every evening from Ludgate Station to Loughborough Park and Peckham Junction stations, at such hours, not being later than seven in the morning or earlier than six in the evening, as may be most convenient to artisans, &c. residing at or beyond Camberwell, at fares not exceeding one penny per passenger for each journey (in addition to the Government duty), and stopping at all intermediate stations.

Section 135 contains provisions for enabling the Company to ascertain the rights of applicants for cheap tickets.

Section 136 provides for penalties for the abuse of tickets.

Section 137 limits the compensation for injury to passengers travelling with cheap tickets to a sum not exceeding one hundred pounds.

The Company is running the following workmen's trains, viz.:—

Detail of
trains run-
ning.

On the Main Line.

1. At 5.25 a.m. from Victoria, arriving at Penge 5.48.
2. At 6.0 a.m. „ Holborn „ „ 6.33.
3. At 5.14 a.m. „ Penge „ Victoria at 5.45 and Holborn at 5.50.
4. At 6.9 a.m. „ „ „ „ 6.36 and St. Paul's 6.34 a.m.
5. At 7.9 a.m. „ „ „ Holborn at 7.40.
6. At 7.18 a.m. „ „ „ Victoria at 7.45.

These trains stop at all intermediate stations, except Nos. 4 and 5, which miss Loughborough Junction, Camberwell, Walworth Road, and Borough Road.

On the return journey the workmen's tickets are available by any third-class train after 4.30 p.m., and on Saturdays after 12 noon.

On the Metropolitan Extension.

1. At 4 a.m. from Victoria, arriving at Ludgate at 4.36.
2. At 4.57 a.m. „ „ „ 5.32.
3. At 5 a.m. „ „ „ 5.36.
4. At 5.58 a.m. „ „ „ 6.31.
5. At 6.2 a.m. „ „ „ 6.36.
6. At 5 a.m. Ludgate „ Victoria at 5.39.
7. At 5.55 a.m. „ „ „ 6.34.
8. At 6 a.m. „ „ „ 6.39.
9. At 6.11 a.m. Loughboro'Jn., „ Ludgate at 6.25.

All these trains stop at all intermediate stations.

Nos. 2, 4, and 7 are relief trains, and are not advertised.

On the return journey workmen's tickets are available by any of the ordinary trains leaving Victoria or Snow Hill after 4.30 p.m., and on Saturdays after 12 noon; but the holders of such tickets on the return journey from the City must join the trains at Snow Hill and not at Ludgate.

On the Greenwich Line.

1. At 5.33 a.m. from Nunhead, arriving at Holborn Viaduct 5.54 a.m.
2. At 6.20 a.m. „ „ „ 6.50 a.m.

No. 1 misses Camberwell, Walworth, Borough Road, and St. Paul's.

No. 2 calls at all stations.

Passengers can also obtain workmen's tickets to Victoria by the trains leaving Nunhead at 5.33 and 6.58 a.m., and Peckham Rye at 5.26 and 7.1 a.m., changing at Loughborough Junction.

On the main line the return fare between Victoria or Holborn and Penge, Sydenham Hill, Dulwich, and Herne Hill is 4*d.* for each daily return journey; and the distance from Penge to Victoria is 7 miles 15 chains, and to Holborn is 7 miles 57 chains.

On the Metropolitan Extension the daily return fare between any of the stations is 2*d.*, and the distance from Victoria to Ludgate is 7 miles 7 chains.

On the main line from Victoria or Holborn to Penge and the intermediate stations and on the Metropolitan Extension or loop daily return tickets only are issued. The tickets are available in third-class carriages only. Applicants may be required to give their names and addresses, and those of their employers; but as a rule this is not done. On the Greenwich line the daily return fare is 4*d.*

Each holder is allowed to bring at his or her sole risk a basket, not exceeding 56 lbs. weight, containing trade tools so packed as not to be inconvenient or dangerous. No other luggage is allowed.

In November 1889, 120,282, and in December 1889, 100,881 daily tickets were issued.

For the whole year 1889 the numbers were—

Daily tickets	1,359,072
Weekly tickets (issued only to company's staff)	8,621

Number
of tickets
issued.

The trains used for workmen are all ordinary trains, and are not specially made up for the purpose.

Make-up of
trains.

On the Main Line.

The 5.25 from Victoria has three first-class, three second-class, and four third-class carriages, and seats 190 third-class passengers. The 6.0 from Holborn has one first-class, one second-class, and three third-class carriages, and seats 150 third-class passengers. The 5.14 from Penge has one first-class, one second-class, and three third-class carriages, and seats 150 third-class passengers. The 7.9 from Penge, one first-class, two second-class, and six third-class carriages, and seats 300 third-class passengers. The 7.21 from Penge has two first-class, one second-class, and three third-class carriages, and seats 150 third-class passengers.

On the Metropolitan Extension.

The 4 a.m. from Victoria and the 5 a.m. from Ludgate have three first-class, three second-class, and seven third-class carriages, and seat 350 third-class passengers. The 4.57 from Victoria and the 5.55 from Ludgate have three first-class, three second-class, and eight third-class carriages, and seat 400 third-class passengers.

The 5 a.m. from Victoria and the 6 a.m. from Ludgate have three first-class, three second-class, and six third-class carriages, and seat 300 third-class passengers.

The 5.58 from Victoria has three first-class, three second-class, and eight third-class carriages, and seats 370 third-class passengers. The 6.2 from Victoria has three first-class, three second-class, and seven third-class carriages, and seats 320 third-class passengers. The 6.11 a.m. from Loughborough Junction has five third-class carriages, and seats 250 third-class passengers.

Remarks.

The accommodation provided by the morning trains appears to be quite sufficient to meet the requirements of workmen who take advantage of the cheap fares, and, unless on very exceptional occasions, no overcrowding takes place.

There is a considerable amount of overcrowding in the evening trains, and serious difficulty has been experienced more or less at every station on the Metropolitan Extension in consequence of the issue of workmen's tickets, especially by the afternoon trains used by business people returning from the city.

The Company loses a very large amount of valuable traffic which is crowded out in consequence of the manner in which the afternoon trains are taken possession of by workmen.

METROPOLITAN RAILWAY COMPANY.

Statutory obligations.

The statutory obligations of this Company are laid down in the usual terms in the following Acts :—

I.—*The Metropolitan Railway (Finsbury Circus Extension) Act, 1861,*
24 & 25 Vict. cap. 233.

Section 24 requires that *one* train shall be run every morning from Paddington to the station near Finsbury Circus, and *one* every evening from that station to Paddington, stopping at intermediate stations, at such hours in the morning and afternoon as may be most convenient for the labouring classes residing at or beyond Paddington, or at other places near the intermediate stations, at fares not exceeding one penny per passenger for each journey.

II.—*The Metropolitan Railway (Notting Hill and Brompton Extension) Act, 1864,*
27 & 28 Vict. cap. 291.

Section 45 requires that there shall be run in connection with the trains required to be run under the section of the Act of 1861 quoted above one train every morning from Brompton to Paddington and one train every evening from Paddington to Brompton, at such hours (not being later than seven in the morning or earlier than six in the evening) as may be most convenient for the labouring classes resident at or beyond Notting Hill, at fares not exceeding one penny per passenger over the whole or any part of the railway of the Company, and stopping at every intermediate station.

Section 46 limits the compensation for injury to passengers travelling with cheap tickets under the preceding section, and section 24 of the Act of 1861 to a sum not exceeding one hundred pounds.

III.—*The Metropolitan and St. John's Wood Railway Act, 1864,* 27 & 28 Vict. cap. 303.

Section 89 requires that one train shall be run every morning from St. John's Wood to Baker Street and one every evening from Baker Street to St. John's Wood, at such hours (not being later than seven in the morning or earlier than six in the evening) as may be most convenient for the labouring classes resident at or near St. John's Wood, at fares not exceeding one penny per passenger for each journey, and stopping at every intermediate station.

Note.—*St. John's Wood is understood to include the St. John's Wood Road, Marlboro' Road, and Swiss Cottage Stations only, as although the Metropolitan Company issue workmen's tickets to and from all stations beyond Swiss Cottage to Neasden inclusive, they are under no statutory obligation so to do.*

The Company are running the following trains:—

Details of
trains run-
ning in
January
1890.

On the Main Metropolitan, District, and Hammersmith Lines.

EAST TO WEST TRAINS.

1.	5.26 a.m.	from Aldgate,	arriving at Mansion House at 6.27 a.m.
2.	5.29	" "	" " Hammersmith at 6.8 a.m.
3.	5.37	" "	Mansion House, arriving at Mansion House at 6.47 a.m.
4.	5.49	" "	Aldgate " Hammersmith at 6.28 a.m.
5.	5.47	" "	Mansion House " South Kensington at 6.35 a.m.
6.	{ 6.6	" "	Saint Mary's, }
	{ 6.8	" "	Aldgate East, }
7.	*6.16	" "	Aldgate, " South Kensington at 6.55 a.m.
8.	*6.19	" "	" " Bishops Road at 6.43 a.m.
9.	*6.29	" "	" " " " 6.53 a.m.
10.	*6.33	" "	" " " " 6.57 a.m.
11.	*6.36	" "	" " South Kensington at 7.15 a.m.

WEST TO EAST TRAINS.

1.	5.15 a.m.	from Hammersmith,	arriving at Aldgate at 5.54 a.m.
2.	5.30	" "	South Kensington, " 6.8 a.m.
3.	5.35	" "	Hammersmith " St. Mary's (Whitechapel) at 6.17 a.m.
4.	5.48	" "	Aldgate, " Aldgate at 6.25 a.m.
5.	5.49	" "	Farringdon Street " Mansion House at 6.6 a.m.
6.	5.51	" "	Latimer Road " Aldgate at 6.25 a.m.
7.	5.53	" "	Hammersmith " " 6.32 a.m.
8.	†6.0	" "	South Kensington, " " 6.38 a.m.
9.	‡6.6	" "	Latimer Road " " 6.40 a.m.
10.	§6.4	" "	Hammersmith " St. Mary's at 6.47 a.m.
11.	6.10	" "	South Kensington " Aldgate at 6.48 a.m.
12.	6.32	" "	Edgware Road " " 6.53 a.m.

* Workmen are booked by these trains from Aldgate and Bishopsgate only.

† Workmen are booked by this train from all stations between South Kensington and Aldgate, it also conveys workmen passengers booked from Aldgate and Bishopsgate to District Stations.

‡ Workmen are booked by this train from Latimer Road, Notting Hill, and Westbourne Park, to stations on the Metropolitan Railway between Edgware Road and Aldgate, it also conveys workmen passengers booked locally by the Metropolitan at each station between Edgware Road and Aldgate.

§ Workmen are booked by this train from Hammersmith, Shepherd's Bush, Latimer Road, Notting Hill, and Westbourne Park, to stations on the Metropolitan Railway between Edgware Road and Aldgate.

It also conveys workmen passengers booked locally by the Metropolitan at each station between Edgware Road and Aldgate.

|| This is an ordinary train from Hammersmith at 6.14 a.m., but being sandwiched between other workmen's trains passengers are supplied with workmen's tickets from Edgware Road and all stations to Aldgate.

On the St. John's Wood Line.

DOWN TRAINS.

1. 6.19 a.m. from Baker Street, arriving at Neasden at 6.38 a.m.

UP TRAINS.

1. 5.48 a.m. from Neasden, arriving at Baker Street at 6.8 a.m.
 2. 6.15 „ „ „ „ „ 6.35 a.m.

Make-up of Trains.

	First.	Composite.	Second.	Third.	Total.
On the Circle - -	1 coach 60 pass.	1 coach 30 pass., 1st-class 40 pass., 2nd-class.	1 coach 70 pass.	3 coaches 210 pass.	6 coaches 410 pass.
On the Hammersmith Line -	Ditto	Ditto	„	„	„
On the St. John's Wood Line	Ditto	Ditto	1½ coaches 110 pass.	2 coaches 140 pass.	5½ coaches 380 pass.

Make-up of
trains.

Workmen's
return fares.

The return journey fares charged to workmen in respect of the foregoing trains are as under :—

Between		Maximum Distance for which the Fares operate.	Fare.
Cannon Street - -	- } and { Farringdon Street - -	m. c. 2 31	2d.
Monument - -	- } and { Stations intermediate - -	2 15	
Cannon Street - -	- } and { Stations beyond Farringdon	6 51	3d.
Monument - -	- } and { Street to Bayswater inclusive -	6 35	
Mark Lane - -	- } and { Kensington High Street - -	7 16	2d.
Aldgate East - -	- } and { Stations intermediate - -	6 68	
St. Mary's - -	- and { Farringdon Street - -	1 75	2d.
	- and { Stations intermediate - -		
St. Mary's - -	- and { Stations beyond Farringdon	7 21	3d.
	- and { Street to Kensington High		
	- and { Street inclusive - -		
Aldgate, Metropolitan	- and { South Kensington - -	7 62	2d.
	- and { and		
	- and { Stations intermediate - -		
„ - -	- and { All Stations on the St. John's	8 3	4d.
	- and { Wood Line to Willesden in-		
	- and { clusive - -		
„ - -	- and Neasden only - -	9 24	6d.
„ - -	- and { All Stations on the Hammer-	8 47	4d.
	- and { smith and City Railway to		
	- and { Hammersmith inclusive - -		
„ - -	- and { All Stations on the District Rail-	4 36	2d.
	- and { way on the Circle to Sloane		
	- and { Square inclusive - -		
King's Cross - -	- } and { Sloane Square - -	*6 49	3d.
Gower Street - -	- } and { Victoria - -		
Portland Road - -	- } and { St. James' Park - -		
Baker Street - -	- } and { Westminster Bridge - -		
Edgware Road - -	- } and { Charing Cross - -		
Praed Street - -	- } and { The Temple - -		
Bayswater - -	- } and { Blackfriars - -		
	- } and { and		
	- } and { Mansion House - -		

* This distance is taken between the maximum points, viz., Edgware Road and Temple.

Daily return tickets only are issued which are available for the day of issue and in third-class carriages, although the Company do, when necessary, recognise their use in second-class carriages.

Conditions under which workmen's tickets are issued.

They are issued upon the condition that the liability of the Company in the case of injury to the holder is limited to a sum not exceeding one hundred pounds.

They are issued without any restriction to any person applying for them, and are available at intermediate stations between those to and from which issued.

The luggage allowed is limited to hand luggage.

The trainage facilities at present afforded to workmen are in excess of those afforded at the date (24th February 1883) on which the Board of Trade statement was printed, for instead of three down and five up main line and Hammersmith trains run in 1882, the company are now running 11 down and 12 up trains, with a small increase in the trains run on the St. John's Wood line.

The number of third-class coaches on the main line and Hammersmith trains have also been increased by 33 per cent., and this, together with the additional number of trains run, more than compensate for the increase in the number of workmen now conveyed as compared with 1882.

This increased service of workmen's trains is run continuously throughout the year, in order to enable workmen to reach their work regularly all the year round.

The inconvenience from overcrowding referred to in the Board of Trade Report of 24th February 1883, has been minimised if not obviated by the additional accommodation and trains furnished by the Company for the convenience of the working classes, and full information as to the times at which the trains are run is to be found indicated both in the large time bills exhibited at the stations and in the published time tables of the Company, two separate pages of which are devoted to this subject.

Number of Workmen's Tickets issued from and to Metropolitan Stations in 1889.

The under-mentioned indicates the number of tickets issued from and to Metropolitan stations during the month of October 1889:—

Number of workmen's tickets issued from and to Metropolitan stations in 1889.

Description of Tickets issued.					Number of Tickets issued.
Metropolitan, Local	-	-	-	-	82,490
" with Eastern Joint	-	-	-	-	5,853
" " Western Joint	-	-	-	-	38,562
" " District	-	-	-	-	36,961
" " Hammersmith	-	-	-	-	28,507
Total					192,373

The total number (approximately) of tickets issued during the year 1889 was 2,308,476.

The holders of workmen's tickets are allowed to perform the return journey by any train after 12 noon.

Availability of workmen's return tickets.

METROPOLITAN DISTRICT RAILWAY COMPANY.

The statutory obligations of this Company are laid down in the usual terms in the following Acts, viz:—

Statutory obligations.

I.—The Metropolitan District Railway Act, 1864, 27 & 28 Vict. cap. 322.

Section 90 requires that one train shall be run every morning from Kensington to Trinity Square, and one every evening from Trinity Square to Kensington, at such hours, not being later than seven in the morning or earlier than six in the evening, as may be most convenient for the labouring classes, &c., at fares not exceeding one penny per passenger for each journey, and stopping at every station.

II.—The Metropolitan District Railway Act, 1870, 33 & 34 Vict. cap. 94.

Section 16 is to the effect that the above section 90 of the Act of 1864 shall read and have effect as though the words "Bread Street" and "Queen Street" stations were inserted therein in addition to "Trinity Square;" and it also limits the liability of the Company under any claim for compensation for injury or otherwise, in respect of passengers travelling with cheap tickets, to a sum not exceeding one hundred pounds.

Note.—Kensington is understood to include Kensington High Street and Earl's Court stations.

III.—The Metropolitan District Railway Act, 1884, 47 & 48 Vict. cap. 229.

Section 23 further limits the liability of the Company under any claim for compensation for injury or otherwise in respect of passengers travelling with workmen's tickets, whether issued by the Company or by any Company having arrangements for booking over the Company's railways.

The trains used are those in regular working throughout the day, and are made up as follows:—

2 first-class carriages, seating 80 passengers	3 second-class carriages, seating 140 passengers	4 third-class carriages, seating 190 passengers
---	---	--

or nine carriages in all, seating 410 passengers, excluding the guards' compartments.

Some of the trains running between High Street (Kensington) and Putney Bridge and Wimbledon, and also High Street (Kensington) or Earl's Court and Chiswick Park, and Acton Green and Hounslow Barracks, are made up as follows:—

1 first-class carriage, seating 40 passengers	2 second-class carriages, seating 90 passengers	2 third-class carriages, seating 90 passengers
--	--	---

or five carriages in all, seating 220 passengers, excluding the guards' compartments.

Other trains are made up as follows:—

1 first-class carriage, seating 40 passengers	1 second-class carriage, seating 40 passengers	2 third-class carriages, seating 90 passengers
--	---	---

or four carriages in all, seating 170 passengers, excluding the guards' compartments.

The Company is running every morning on week-days the following trains for workmen:—

EAST TO WEST.

	From	Route.	Arriving at						Stations for which Workmen's Tickets are issued.
			High Street (Kensington).	Hammersmith.	Hounslow Barracks.	Richmond.	Putney Bridge.	Wimbledon.	
Inner Circle.	South Kensington - 5.30	Gloucester Road	5.35	—	—	—	—	—	{ South Kensington and Gloucester Road to High Street (Kensington).
	Ditto " - 6.0	Ditto	6.5	—	—	—	—	—	
	Ditto " - 6.10	Ditto	6.15	—	—	—	—	—	
	Aldgate - 5.48	Victoria	6.25	—	—	—	—	—	{ Aldgate and intermediate stations as far as High Street (Kensington), and from District Railway stations to Notting Hill Gate and other Metropolitan Railway stations <i>via</i> High Street (Kensington).
Main Line.	High Street (Kensington) 6.3	Earl's Court	—	—	—	—	6.15	—	{ High Street (Kensington) and intermediate stations as far as Putney Bridge (Fulham).
	Whitechapel, Mile End - 5.50	Ditto	—	6.35	—	6.53	—	—	{ Whitechapel, Mile End, and intermediate stations to Hammersmith and Putney Bridge (Fulham) inclusive, and also Mansion House and intermediate stations to Hammersmith to Richmond, Boston Road, and stations to Hounslow Barracks inclusive.
	Connecting at— West Kensington with 6.35 Earl's Court with 6.38	Hammersmith-Walham Green	—	—	7.18	—	6.45	—	
Inner Circle.	Farringdon Street - 5.49	Victoria	6.35	—	—	—	—	—	{ Farringdon Street and Metropolitan Railway stations to Aldgate with District Railway stations <i>via</i> Mark Lane, and also Mark Lane and intermediate District Railway stations as far as High Street (Kensington), and from District Railway stations to Metropolitan Railway stations <i>via</i> High Street (Kensington).
	Aldgate - 6.18	Victoria	6.55	—	—	—	—	—	{ Aldgate and Metropolitan Railway Stations west thereof to District Railway stations <i>via</i> Mark Lane, and also Mark Lane and intermediate District Railway stations as far as High Street (Kensington).
	Bishopsgate - 6.35	Victoria	7.15	—	—	—	—	—	{ Bishopsgate and Aldgate only to stations as far as Sloane Square.

Make-up of trains.

Details of trains running.

	From	Route.	Arriving at						Stations for which Workmen's Tickets are issued.
			High Street (Kensington).	Hammersmith.	Hounslow Barracks.	Richmond.	Putney Bridge.	Wimbledon.	
Main Line.	St. Mary's (Whitechapel) 6.22 Connecting at— Earl's Court with - 7.6	Victoria Walham Green	- -	7.5 -	- -	7.23 -	- 7.15	- 7.27	{ St. Mary's (Whitechapel) and intermediate stations to Hammersmith and Putney Bridge (Fulham) and Wimbledon inclusive, and also Mansion House and intermediate stations to Hammersmith to Richmond only. Mansion House and intermediate stations to Hammersmith to Richmond only. Mansion House and intermediate stations to Hammersmith to Boston Road and stations to Hounslow Barracks only. Mansion House and intermediate stations to Hammersmith to Richmond only.
	Mansion House - - 7.3	Victoria	-	-	-	7.53	-	-	
	Ditto - - 7.12	Ditto	-	-	8.18	-	-	-	
	Ditto - - 7.33	Ditto	-	-	-	8.22	-	-	

All the foregoing trains stop at intermediate stations and workmen's tickets are issued from intermediate stations unless shown above to the contrary.

The Company is running every morning on week days the following trains for workmen:—

WEST TO EAST.

	Starting from								Route.	Arriving at	Stations for which Workmen's Tickets are issued.
	Wimbledon.	Putney Bridge.	Richmond.	Hounslow Barracks.	Hammersmith.	South Kensington.	High Street (Kensington).	Mansion House.			
Inner Circle {	-	-	-	-	-	-	-	5.37	Mark Lane.	Aldgate - - 5.46	{ Mansion House to Metropolitan Railway stations, <i>via</i> Aldgate.
	-	-	-	-	-	-	-	5.47	Do.	Do. - - 5.50	
Main Line -	-	-	-	-	5.20	-	-	-	Do.	{ St. Mary's (Whitechapel) 6.3	{ Hammersmith and intermediate stations to St. Mary's (Whitechapel) inclusive.
Inner Circle -	-	-	-	-	-	5.45	-	-	Do.	Aldgate - - 6.16	{ South Kensington and intermediate stations to Mark Lane inclusive, also from District Railway stations to Metropolitan Railway stations, <i>via</i> Mark Lane.
Main Line -	5.38	5.50	-	-	-	-	-	-	Do.	{ Whitechapel, Mile End - 6.37	{ Wimbledon and intermediate stations to Whitechapel, Mile End inclusive.
Inner Circle -	-	-	-	-	-	-	6.0	-	Do.	Aldgate - - 6.36	{ Notting Hill Gate and other Metropolitan Railway stations to District Railway stations, <i>via</i> High Street (Kensington), and from High Street (Kensington) and intermediate stations to Mark Lane inclusive, and also from District Railway stations to Metropolitan Railway stations, <i>via</i> Mark Lane.
Main Line -	-	-	-	-	5.50	-	-	-	Do.	{ St. Mary's (Whitechapel) 6.42	{ Hammersmith and intermediate stations to St. Mary's (Whitechapel) inclusive.
Inner Circle {	-	-	-	-	-	-	6.20	-	Do.	Aldgate - - 6.56	{ Notting Hill Gate and other Metropolitan Railway stations to District Railway stations, <i>via</i> High Street (Kensington), and also from High Street (Kensington) and intermediate stations to Mark Lane inclusive.
	-	-	-	-	-	-	6.30	-	Do.	Aldgate - - 7.0	
Main Line {	-	6.20	-	-	-	-	-	-	Do.	{ St. Mary's (Whitechapel) 7.12	{ Putney Bridge (Fulham) and stations to Earl's Court only, to Gloucester Road, and stations to St. Mary's (Whitechapel) inclusive.
	-	-	7.11	-	-	-	-	-	Temple	Mansion House - 8.1	{ Richmond only to Hammersmith and intermediate stations to Mansion House inclusive.
	-	-	-	7.6	-	-	-	-	Do.	Do. - 8.10	
	7.36	-	-	-	-	-	-	-	Mark Lane.	{ Whitechapel, Mile End - 8.37	{ Wimbledon and stations to East Putney only to - Hammersmith and intermediate stations to Whitechapel, Mile End inclusive.
	-	-	-	7.36	-	-	-	-	Temple	Mansion House - 8.40	{ Hounslow Barracks and stations to Boston Road only to - Hammersmith and intermediate stations to Mansion House inclusive.

All the foregoing trains stop at intermediate stations, and workmen's tickets are issued from intermediate stations, unless shown above to the contrary.

Fares.

The return fares are :—

Between	{ Whitechapel, Mile End, and St. Mary's (Whitechapel) }	and	{ Stations on Inner Circle, including Earl's Court West Brompton and stations to Putney Bridge West Kensington. Hammersmith }	3d.
				5d.
				4d.
				5d.
Between	Aldgate East	and	{ Stations on Inner Circle, including Earl's Court West Brompton and stations to Putney Bridge, West Kensington, Hammersmith }	2d.
				4d.
Between	Inner Circle stations	and	{ Earl's Court West Brompton, and stations to Putney Bridge, West Kensington, Hammersmith }	2d.
				4d.
Between	{ Mansion House and stations to Hammersmith, including High Street (Kensington) }	and	{ Boston Road and stations to Hounslow Barracks, inclusive }	Vary from (per day) 6d. to 10d.
Between	{ Mansion House and stations to Hammersmith, including High Street (Kensington) }	and	Richmond	6d. to 8d.
Between	{ District Railway stations }	and	{ Stations on London and South-Western Company's Wimbledon Line }	Vary from (per week) 2s. 6d. to 3s. 6d., or (per day) 5d. to 7d.
(Weekly tickets only are issued)				
Between	Mark Lane	and	High Street (Kensington)	2d.
or between any intermediate stations				
Between	{ Stations on District Railway, Mark Lane to High Street (Kensington), inclusive }	and	{ Stations on Metropolitan Railway, Aldgate to Notting Hill Gate, inclusive }	2d. or 3d.
The fare is 3d., but in some cases 2d. only is charged				

Availability
of tickets.

Workmen are not allowed to use these tickets for the return journey by any train before 12 o'clock noon. Workmen holding tickets for Richmond and for stations on Hounslow line, and also for stations on Wimbledon line, cannot use them before 5 o'clock p.m., except on Saturdays, when they may be used by any train after 12 o'clock noon.

Workmen's tickets are available for the day of issue only, and are issued to any person applying for them; they are available at intermediate stations between those to and from which issued, and also beyond if the fare be the same.

During the months of September and October 1889 there were issued return tickets as below :—

Between District stations and District stations	-	-	143,762
" " South-Western stations	-	-	1,028
From District stations to Metropolitan stations	-	-	18,209
" Metropolitan stations to District stations	-	-	52,387
Total	-	-	215,386

Number of
tickets
issued.

The total number issued at District stations in 1889 was 841,495.

Main Line—

		miles.	chains.	Distances.
Whitechapel, Mile End, to Hammersmith	-	-	8 33	
" " Putney Bridge	-	-	8 79	
" " Hounslow Barracks	-	-	16 70	
" " Richmond	-	-	13 13	
" " Wimbledon	-	-	12 38	

Inner Circle—

Aldgate to High Street (Kensington), <i>viâ</i> Victoria	-	6 20
Aldgate to Aldgate (<i>i.e.</i> , length of whole of Inner Circle)	13 0	

Metropolitan District Railway,
Manager's Office,
Parliament Mansions, S.W.,
11th March 1890.

NORTH LONDON RAILWAY COMPANY.

The statutory obligations of this Company are laid down in the usual terms in the following Acts, viz.:—

Statutory
obligations.

I.—*The North London Railway (City Branch) Act, 1861, 24 & 25 Vict. cap. 196.*

Section 45 requires that *one* train shall run every morning from Kingsland station to Liverpool Street, and *one* every evening from Liverpool Street to Kingsland station, at such hours, not being later than seven in the morning or earlier than six in the evening, as may be most convenient for the labouring classes residing at or beyond Kingsland and having business in London, at fares not exceeding one penny per passenger for each journey.

II.—*The North London Railway Act, 1867, 30 Vict. cap. 78.*

Section 50 limits the compensation for injury to passengers travelling with cheap tickets to a sum not exceeding one hundred pounds.

Section 51 contains the usual provisions for enabling the Company to ascertain the rights of applicants for cheap tickets.

Section 52 provides for penalties for the abuse of tickets.

Note.—Kingsland and Liverpool Street stations are now named Dalston junction and Broad Street respectively.

The Company is running the following workmen's trains:—

1. At 5.16 a.m. from Poplar, arriving at Broad Street at 5.41 a.m.	
2. At 5.46 " " " "	6.11 "
3. At 6.16 " " " "	6.41 "
4. At 6.31 " " " "	6.56 "
5. At 6.46 " " " "	7.11 "
6. At 7.1 " " " "	7.26 "
7. At 7.16 " " " "	7.41 "
8. At 7.31 " " " "	7.56 "
9. At 7.10 " Bow " "	7.31 "
10. At 7.18 " " " "	7.39 "

Detail of
trains run-
ning.

11.	At 7.28 a.m.	from Bow, arriving at Broad Street at 7.47 a.m.	
12.	At 7.33	" " " "	7.53 "
13.	At 7.40	" " " "	8.1 "
14.	At 6.24	" Canonbury	6.36 "
15.	At 5.29	" Chalk Farm	5.51 "
16.	At 5.59	" " " "	6.21 "
17.	At 6.29	" " " "	6.51 "
18.	At 6.44	" " " "	7.6 "
19.	At 6.59	" " " "	7.21 "
20.	At 7.14	" " " "	7.36 "
21.	At 7.29	" " " "	7.51 "
22.	At 5.30	" Broad Street " Chalk Farm at 5.54	" "
23.	At 6.0	" " " "	6.24 "
24.	At 6.30	" " " "	6.54 "
25.	At 6.45	" " " "	7.9 "
26.	At 7.0	" " " "	7.24 "
27.	At 7.15	" " " "	7.39 "
28.	At 7.30	" " " "	7.54 "
29.	At 6.5	" " Poplar	6.33 "
30.	At 6.20	" " " "	6.48 "
31.	At 6.50	" " " "	7.18 "
32.	At 7.5	" " " "	7.33 "
33.	At 7.20	" " " "	7.48 "
34.	At 7.35	" " " "	8.3 "

These trains stop at all intermediate stations.

On the return journey the tickets are available in any Chalk Farm or Blackwall train leaving Broad Street after 4 p.m., and on Saturdays after 12 o'clock noon.

The return fare between Poplar or Chalk Farm or either of the intermediate stations and Broad Street is 1s. per week, and the distances from Broad Street are,—

	miles.	chains.
Shoreditch - - - - -	0	57
Haggerston - - - - -	1	40
Dalston - - - - -	2	0
Hackney - - - - -	2	67
Homerton - - - - -	3	38
Victoria Park - - - - -	4	7
Old Ford - - - - -	4	55
Bow - - - - -	5	16
South Bromley - - - - -	6	5
Poplar - - - - -	6	38
Mildmay Park - - - - -	2	40
Canonbury - - - - -	2	69
Highbury - - - - -	3	31
Barnsbury - - - - -	3	69
Maiden Lane - - - - -	4	30
Camden Town - - - - -	4	77
Chalk Farm - - - - -	5	51

Workmen's tickets to Broad Street are also available to and from Shoreditch.

Weekly tickets only are issued, and can be obtained by personal application at the booking office at each of the stations named.

The applicant is required to give his full Christian and surname, address, and trade, as well as the name and address of his employer, and to allow a reasonable time for ascertaining, by inquiry, whether the person so applying is an artisan, mechanic, or daily labourer.

The tickets are available by the trains named above, and in the third-class carriages only, and workmen travelling with them are subject to the same regulations as to luggage as other third-class passengers.

The number of *weekly* tickets issued were—

In October 1889	31,883
In November 1889	29,166

The total number issued in 1889 was 335,388, estimated to represent 4,008,140 journeys.

Conditions
under which
cheap tickets
are issued.

The 34 trains before mentioned are made up as follows:—

Make-up of
trains.

No. of Trains.	Composite.	First.	Second.	Third.	Brakes.	Total 3rd-Class seating Capacity.
15	2	2	3	3	2	150
14	2	1	2	5	2	250
3	—	3	4	3	2	150
1	1	3	3	4	2	200
1	1	4	3	2	2	100
34						

There have been no complaints of overcrowding in the workmen's trains.

Remarks.

When, owing to wet weather, or one train being late, there is more pressure than usual, the workmen are allowed to get into the second-class carriages.

Some of the evening down trains are occasionally overcrowded, when the workmen and the ordinary passengers are returning together.

The workmen's trains to the city are advertised by special posters as well as in the time-table books.

LONDON, BRIGHTON, AND SOUTH COAST RAILWAY.

This Company is under no statutory obligations to run workmen's trains, except as one of the lessees and the working company of the East London Railway.

Statutory
obligations.

The obligations of this Company are laid down in the usual terms in the following Act, viz. :—

The East London Railway Act, 1865, 28 Vict. cap. 51.

Section 144 requires that *one* train shall be run every morning from New Cross to Liverpool Street, and *one* every evening from Liverpool Street to New Cross, at such hours, not being later than seven in the morning or earlier than six in the evening, as may be most convenient for artisans, &c., at fares not exceeding one penny per passenger for each journey, and stopping at all the intermediate stations.

Section 145 contains the usual provisions for enabling the Company to ascertain the rights of applicants for cheap tickets.

Section 146 provides for penalties for the abuse of tickets.

Section 147 limits the compensation for injury to passengers travelling with cheap tickets to a sum not exceeding one hundred pounds.

The Company is running the following trains for workmen :—

Detail of
trains
running.

On the South London, Peckham, and Sutton Lines.

1. At 4.51 a.m. from Battersea Park, arriving at London Bridge at 5.19 a.m.
2. At 5 a.m. from Victoria, " " 5.34 "
3. At 5.25 a.m. from Victoria, " " 5.59 "
4. At 6.0 a.m. from Streatham, " " 6.25 "
5. At 5.55 a.m. from Victoria, " " 6.29 "
6. At 6.30 a.m. from " " 7.4 "
7. From Peckham Rye, 7.1, Queen's Road, 7.4, to London Bridge, arriving 7.14, not to intermediate stations.

On the South London, Peckham, and Sutton Lines.

1. At 5 a.m. from London Bridge, arriving at Victoria at 5.36 a.m.
2. At 5.47 a.m. from " " " at 6.23 "
3. At 5.55 a.m. " " " Streatham at 6.22 "
4. At 6.15 a.m. " " " Victoria at 6.51 "

All these trains stop at all intermediate stations.

5. From Queen's Road 6.45, Peckham Rye 6.48, to Victoria, arriving 7.11, not to intermediate stations.

6. From Queen's Road 7.5, Peckham Rye 7.8, to Victoria, arriving 7.31, not to intermediate stations.

On the East London Line, including Old Kent Road, Queen's Road, and Peckham Rye (Down).

1. At 5.5 a.m. from Liverpool Street, arriving at New Cross at 5.24 a.m. Worked by Great Eastern Company.
2. At 5.22 a.m. from Shoreditch, arriving at Peckham Rye at 5.42 a.m. Worked by Brighton Company.
3. At 5.40 a.m. from Shoreditch, arriving at New Cross at 5.56 a.m. Worked by Brighton Company.
4. At 5.56 a.m. from Liverpool Street, arriving at New Cross at 6.15 a.m. Worked by Great Eastern Company.
5. At 6.20 a.m. from Shoreditch, arriving at Peckham Rye at 6.40 a.m. Worked by Brighton Company.
6. At 6.54 a.m. from Shoreditch, arriving at Peckham Rye at 7.10 a.m. Worked by Brighton Company.

All these trains stop at all intermediate stations, but the Peckham Rye trains do not pass New Cross.

East London Line (Up).

1. At 4.49 a.m. from New Cross, arriving at Shoreditch at 5.5. Worked by Brighton Company.
2. At 5.15 a.m. from New Cross, arriving at Shoreditch at 5.31. Worked by Brighton Company.
3. At 5.30 from New Cross, arriving at Liverpool Street at 5.50. Worked by Great Eastern Company.
4. At 5.53 a.m. from Peckham Rye, arriving at Shoreditch at 6.14. Worked by Brighton Company.
5. At 6.13 a.m. from New Cross, arriving at Shoreditch at 6.29. Worked by Brighton Company.
6. At 6.55 a.m. from Peckham Rye, arriving at Shoreditch at 7.16. Worked by Brighton Company.

All these trains stop at all intermediate stations, but the Peckham Rye trains do not pass New Cross.

On the Croydon Line (Down).

1. At 5.0 a.m. from London Bridge, arriving at South Croydon at 5.40.
 2. At 5.33 a.m. from London Bridge to West Croydon, arriving 6.9 a.m.
- These trains stop at all intermediate stations.

On the Croydon Line (Up).

1. At 5 a.m. from West Croydon, arriving at London Bridge at 5.33.
2. At 5.50 a.m. from South Croydon, „ „ „ 6.38.
3. At 6.43 a.m. from West Croydon, „ „ „ 7.16.
4. At 6.55 a.m. from „ „ „ 7.28.
5. At 7.1 a.m. from Sydenham to London Bridge, arriving 7.21.

These trains stop at all intermediate stations, but No. 4, which calls at Sydenham, Forest Hill, Honor Oak Park, Brockley, and New Cross, to put down workmen only.

The West Croydon trains do not pass New Croydon.

On the Balham Line.

1. At 5.35 a.m. from Victoria, arriving at London Bridge at 6.41.

This train runs viâ Clapham Junction, Balham, and Norwood Junction, and stops at all the 16 intermediate stations.

2. At 5.5 a.m. from West Croydon viâ Balham line, arriving at Victoria at 5.45 a.m.

This train calls at all stations, viz., Selhurst, Thornton Heath, Norbury, Streatham Common, Balham, Wandsworth Common, Clapham Junction, Battersea Park, and Grosvenor Road.

3. At 5.28 a.m. from Clapham Junction to the Crystal Palace, viâ Balham line.

This train calls at the following stations, viz., Streatham Common, Norbury, Thornton Heath, Selhurst, and Norwood Junction, arriving at the Crystal Palace 5.52 a.m.

4. At 5.38 a.m. from Norbury to Victoria, viâ Crystal Palace, arriving at Victoria at 6.30 a.m.

This train calls at all stations, viz., Thornton Heath, Selhurst, Norwood Junction, Crystal Palace, Gipsy Hill, West Norwood, Streatham Hill, Balham, Wandsworth, Common, Clapham Junction, Battersea Park, and Grosvenor Road.

West London Extension Line.

1. At 5.43 a.m. from Clapham Junction, arriving at Kensington at 5.54 a.m.

This train calls at Battersea and West Brompton only, and is worked by the London and South-Western Company.

West End Line.

1. At 6.20 a.m. from London Bridge to Victoria, viâ Crystal Palace, arriving at Victoria 7.20 a.m.

This train calls at all stations, viz., New Cross, Brockley, Honor Oak Park, Forest Hill, Sydenham, Crystal Palace, Gipsy Hill, West Norwood, Streatham Hill, Balham, Wandsworth Common, Clapham Junction, Battersea Park, and Grosvenor Road.

The workmen's tickets by the whole of the above trains are available for the return journey by any third-class train, except main line trains, after 4 p.m., and on Saturdays after 12 noon.

The fares and distances on the above line are as follows:—

Fares and distances.

South London Line.

	Distances.	Fares, Return.	
		From Victoria.	From London Bridge.
	m. ch.		
Victoria - - - -	—	—	4d.
Grosvenor Road - - -	0 58	—	4d.
Battersea Park - - -	1 29	—	4d.
Wandsworth Road - - -	1 77	2d.	4d.
Clapham - - - -	2 29	2d.	4d.
Loughborough Park - - -	3 41	3d.	3d.
Denmark Hill - - -	4 27	4d.	3d.
Peckham Rye - - - -	5 17	4d.	3d.
Queen's Road - - -	5 72	4d.	3d.
Old Kent Road - - -	6 15	4d.	3d.
South Bermondsey - - -	7 7	4d.	2d.
London Bridge - - -	8 51	4d.	—

South London, Peckham, and Sutton Lines.

	Distances.	Return Fares.	
		From Victoria.	From London Bridge.
	m. ch.		
London Bridge - - -	—	Same as above.	
South Bermondsey - - -	1 44		
Old Kent Road - - -	2 36		
Queen's Road - - -	2 59		
Peckham Rye - - -	3 34		
Champion Hill - - -	4 21	—	4d.
North Dulwich - - -	4 64	—	4d.
Tulse Hill - - -	6 7	—	4d.
Streatham - - -	7 49	—	4d.
Denmark Hill - - -	4 24	Same as above.	
Loughborough Park - - -	5 10		
Clapham - - -	6 22		
Wandsworth Road - - -	6 54		
Battersea Park - - -	7 22		
Grosvenor Road - - -	7 73		
Victoria - - -	8 51		

East London Line.

	Distance.	Return Fares.		
		Peckham Rye.	New Cross.	Liverpool Street.
	m. ch.			
Liverpool Street	—	7d.	4d.	—
Shoreditch	0 51	6d.	4d.	2d.
Whitechape	1 8	6d.	4d.	2d.
Shadwell	1 57	4d.	3d.	2d.
Wapping	2 17	4d.	3d.	3d.
Rotherhithe	2 43	4d.	2d.	4d.
Deptford Road	3 6	4d.	2d.	4d.
New Cross	4 37	—	—	4d.
Old Kent Road	4 23	—	—	4d.
Queen's Road	4 46	—	—	7d.
Peckham Rye	5 21	—	—	7d.

Croydon Line.

	Distance.	Return Fares.
	m. ch.	
London Bridge	—	—
New Cross	3 0	4d.
Brockley	3 61	4d.
Forest Hill	5 47	4d.
Sydenham	6 36	4d.
Penge	7 8	4d.
Anerley	7 44	4d.
Norwood Junction	8 53	4d.
New Croydon	10 28	6d.
West Croydon	10 38	6d.

Victoria to London Bridge, viâ Balham.

	Distance.	Return Fares.	
		Victoria.	London Bridge.
	m. ch.		
Victoria	—	—	4d.
Grosvenor Road	0 58	—	4d.
Battersea Park	1 29	—	4d.
Clapham Junction	2 62	2d.	6d.
Wandsworth Common	4 11	3d.	6d.
Balham	4 51	4d.	6d.
Streatham Common	6 56	4d.	6d.
Norbury	7 40	4d.	6d.
Thornton Heath	8 61	4d.	5d.
Selhurst	9 40	5d.	4d.
Norwood Junction	10 38	5d.	4d.
Anerley	11 47	6d.	4d.
Penge	12 3	6d.	4d.
Sydenham	12 55	6d.	4d.
Forest Hill	13 44	6d.	4d.
Brockley	15 30	6d.	4d.
New Cross	16 11	6d.	4d.
London Bridge	19 11	4d.	—

The workmen's tickets are available at intermediate stations between those to and from which issued, but they are not available beyond the stations named thereon, and if used in contravention of this rule the ticket will be ignored and the full fare charged from the starting point of the train. These tickets are issued at a reduced rate on the condition that the liability of the Company to make compensation for injury, or otherwise, in respect of the passengers shall be limited to a sum not exceeding one hundred pounds, the amount to be determined by an arbitrator to be appointed by the Board of Trade.

Conditions under which tickets are issued.

The tickets are available in third-class carriages only, and are issued to any person who may apply for them. The luggage is limited to hand luggage.

The following is the make-up of the trains used for workmen :—

Make-up of trains.

South London.

Number of Train.	1st Class.	2nd Class.	3rd Class.	Composite.	3rd Class Breaks.	Number of 3rd Class Seats.
1	3	2	4	1	2	280
2	3	2	4	1	2	280
3	3	2	4	1	2	280
4	3	2	4	1	2	280
5	3	2	4	1	2	280
6	3	3	4	1	2	280
7	3	2	4	1	2	280

South London, Peckham, and Sutton Lines.

1	3	2	3	1	2	230
2	3	2	4	—	2	280
3	—	—	1	3	2	130
4	3	2	4	1	2	280
5	3	2	4	1	2	280
6	3	2	2	1	2	180

East London Line (Down).

1	1	1	2	—	2	180
2	1	1	3	—	2	230
3	—	—	3	2	2	230
4	1	1	2	—	2	180
5	1	1	3	—	2	230
6	—	—	3	2	2	230

East London Line (Up).

1	1	1	3	—	2	230
2	—	—	3	2	2	250
3	1	1	2	—	2	180
4	1	1	3	—	2	230
5	—	—	3	2	2	230
6	1	1	3	—	2	230

Croydon Line (Down).

1	1	1	8	—	2	480
2	3	2	6	1	3	420

Croydon Line (Up).

1	3	2	4	1	2	280
2	1	1	8	—	2	480
3	3	2	6	1	2	380
4	3	2	6	1	3	420
5	3	2	6	1	2	280

Number of Train.	1st Class.	2nd Class.	3rd Class.	Composite.	3rd Class Breaks.	Number of 3rd Class Seats.
<i>Balham Line.</i>						
1	3	2	2	1	2	280
2	3	2	5	1	2	330
3	3	2	6	1	2	380
4	3	2	6	1	2	380
<i>West London Extension Line.</i>						
1	—	—	2	2	2	180
<i>West End Line.</i>						
1	3	2	4	1	2	280

Remarks.

The Company ran workmen's trains upon their system many years before any statutory obligations came into operation, and long before the passing of the Cheap Trains Act, 1883.

The conditions under which these special cheap return tickets for the working classes are issued are as follows:—

They are only available for the first journey by certain specified trains, as shown in the various time tables and bills issued by the Company, and for the return journey by any third-class train after 4 p.m., except on Saturdays, when they are available after 12 noon.

The tickets are available at any intermediate stations between those to and from which they are issued, but are not available beyond the stations named thereon, and, if used in contravention of the rule, the tickets are ignored, and the full fares are charged from the starting point of the train.

These cheap tickets are issued at a reduced rate, on the express condition that the liability of the Company to make compensation for injury, or otherwise, to the passenger shall be limited to a sum not exceeding 100*l.*, and that the amount of compensation payable in respect of any such passenger shall (subject to such limitation) be determined by an arbitrator to be appointed by the Board of Trade.

Passengers travelling in a workmen's train without tickets, or the holder of a working class ticket travelling by any but authorised working class trains, are charged the full ordinary fare from the station whence the train started, and are liable to the Company's byelaws.

Holders of the cheap working class tickets travelling in first or second class carriages are charged full first or second class fares, as the case may be.

The cheap workmen's tickets are available in third-class carriages only, and are practically issued by the workmen's trains to any person, male or female, who may apply for them; and there is no doubt that in this respect a very large number of these cheap tickets are issued to persons for whom, in the first instance, they were never intended, and who do not by any means come within the category of the *bonâ fide* working classes.

The luggage each passenger is allowed to carry is limited to hand-luggage.

During the months of November and December 1889, the Company issued 488,264 return tickets, the total issue for the year 1889 being 2,954,569 (return tickets numbers doubled), a very large increase compared with the issue for the year 1882, 1,164,928 (return tickets also numbers doubled), particularly when it is taken into account that the returns for the year 1882 included workmen's bookings from the East London Line stations, then worked exclusively by the Brighton Company, and which bookings comprised about one-fourth of the total issue, whereas in the returns for the year 1889 none of the bookings from the East London Line stations are included, the East London Line now being worked by a Joint Committee.

Very few (if any) complaints have been received by the Company with regard to the workmen's traffic. This arises probably in a great measure from the traffic being exclusively third class; whereas the larger proportion of the Brighton Company's daily suburban traffic, in the metropolitan area, being composed of first and second

class season ticket traffic, it is consequently separated from the workmen's traffic by the distinction of classes.

Considerable additions in the number of trains and various other facilities, such as the reduction of the fares, have been conceded to the working classes since Major Marindin's Report in the year 1883.

The whole of the workmen's trains are largely advertised by means of special bills, as well as in the public time table books of the Company, and such trains are also specially noted and distinguished on the ordinary time bill sheets posted up at the Company's stations.

A. SARLE,
Secretary and General Manager.

London Bridge Terminus,
7th May 1890.

GREAT NORTHERN RAILWAY COMPANY.

This Company is not under any statutory obligations under the provisions of their special Acts to run workmen's trains, but this Company's arrangements for the accommodation of workmen are now as follows:—

Leave Enfield	-	-	4.45 a.m.	} Stopping at intermediate stations.
Reaching Moorgate	-	-	5.30 „	
Leave New Barnet	-	-	4.55 „	}
Reach Moorgate	-	-	5.39 „	
Leave High Barnet	-	-	4.57 „	}
Reach Moorgate	-	-	5.48 „	
Leave New Barnet	-	-	5.15 „	}
Reach Moorgate	-	-	6.1 „	
Leave New Barnet	-	-	5.44 „	}
Reach King's Cross	-	-	6.15 „	
Leave Enfield	-	-	5.48 „	}
Reach Moorgate	-	-	6.32 „	

These trains are advertised as workmen's trains in the Company's public time book.

In addition to the above the Company carry between London and all stations in their suburban districts in both directions third-class passengers at half fares, provided the trains by which they travel are appointed to reach their destination before 8 o'clock in the morning.

It is submitted, therefore, that all classes of workmen are fully provided for on the Great Northern. Those that have to commence their work at 6 o'clock in the morning are carried by the earlier workmen's trains, at specially low fares. Other workmen, warehousemen, clerks, &c., whose business commences at, or soon after, 8 o'clock, are carried at half the ordinary return fares, subject to the conditions shown in the printed bill sent herewith.

The six special workmen's trains enumerated above provide accommodation daily for 2,370 third-class passengers, which is amply sufficient, and there is no complaint of overcrowding; but the Company, in order to meet a want which was beginning to be felt, recently altered the train timed to start from Bowes Park at 5.52 a.m., and started it instead from New Barnet at 5.44 a.m.

A list of the fares charged for each class of workman by the special workmen's trains, and by the ordinary trains arriving before 8 o'clock in the morning is also attached.

WORKMEN'S FARES, 3rd Class Return, in operation from—

Station.	KING'S CROSS.		MOORGATE STREET.		ALDERSGATE STREET.		FARRINGTON STREET.	
	A.	B.	A.	B.	A.	B.	A.	B.
	King's Cross by Special Early Workmen's Trains.	Both Ways. Arriving at destination at or before 8 a.m.	Moorgate Street by Special Early Workmen's Trains.	Both Ways. Arriving at destination at or before 8 a.m.	Aldersgate Street by Special Early Workmen's Trains.	Both Ways. Arriving at destination at or before 8 a.m.	Farringdon Street by Special Early Workmen's Trains.	Both Ways. Arriving at destination at or before 8 a.m.
Holloway - - -	d.	d.	d.	d.	d.	d.	d.	d.
Finsbury Park - - -	2	—	3	4	3	4	3	4
Stroud Green - - -	2	4	3	4	3	4	3	4
Crouch End - - -	3	4	3½	4	3½	4	3½	4
Highgate - - -	3	4½	3½	4½	3½	4½	3½	4½
Muswell Hill - - -	—	5	—	6	—	6	—	6
East Finchley - - -	4	5½	4½	7	4½	7	4½	7
Finchley - - -	4	7	5	9	5	8½	5	8½
Woodside Park - - -	4	8½	5	10	5	10	5	9½
Totteridge - - -	5	9	6	11	6	10½	6	10
High Barnet - - -	5	9	6	11	6	10½	6	10
Harringay - - -	3	4	3½	4	3½	4	3½	4
Hornsey - - -	3	4	3½	5	3½	5	3½	5
Wood Green - - -	3	5	3½	6	3½	6	3½	6
Bowes Park - - -	3½	5½	4	6	4	6	4	6
Palmers Green - - -	4	6	4½	7	4½	7	4½	7
Winchmore Hill - - -	4	7½	4½	8½	4½	8½	4½	8½
Enfield - - -	4	9	4½	11	4½	10½	4½	10
New Southgate - - -	4	6	5	8	5	7½	5	7½
Oakleigh Park - - -	5	8	6	10	6	9½	6	9½
New Barnet - - -	5	9	6	11	6	10½	6	10
Hadley Wood - - -	—	10½	—	1/0½	—	1/0	—	11½

The fares in the columns marked A. are applicable to the trains mentioned above from suburban stations to London. The fares in the columns marked B. apply to trains from London stations to the suburbs, and from the suburbs to London, reaching their destination in either direction before 8 o'clock in the morning.

WORKMEN'S FARES, 3rd Class Return, in operation from—

Station.	HOLLOWAY.	FINSBURY PARK.
	Both Ways. Arriving at destination at or before 8 a.m.	Both Ways. Arriving at destination at or before 8 a.m.
	d.	d.
Highgate - - -	4	—
Muswell Hill - - -	4	4
East Finchley - - -	4	4
Finchley - - -	5½	4½
Woodside Park - - -	6½	5½
Totteridge - - -	7½	6½
High Barnet - - -	7½	6½
Hornsey - - -	4	—
Wood Green - - -	4	4
Bowes Park - - -	4	4
Palmers Green - - -	4½	4
Winchmore Hill - - -	6	5
Enfield - - -	7	6½
New Southgate - - -	4½	4
Oakleigh Park - - -	6½	5½
New Barnet - - -	7½	6½
Hadley Wood - - -	9	8

Workmen's 3rd class return tickets are issued as below, viz. :—

From any station in list No. 1 to any station in list No. 2.

From any station in list No. 2 to any station in list No. 1.

List No. 1.

Moorgate Street.
Aldersgate Street.
Farringdon Street.

King's Cross.
Holloway.
Finsbury Park.

List No. 2.

Hadley Wood.	Palmers Green.	Finchley.
New Barnet.	Bowes Park.	East End.
Oakleigh Park.	Hornsey.	Highgate.
New Southgate.	Harringay.	Muswell Hill.
Wood Green.	High Barnet.	Crouch End.
Enfield.	Totteridge.	Stroud Green.
Winchmore Hill.	Woodside Park.	

Also

From	
Holloway	} to Farringdon Street, Aldersgate Street, and Moorgate Street.
Finsbury Park	
Farringdon Street	} to Holloway and Finsbury Park.
Aldersgate Street	
Moorgate Street	
King's Cross to Finsbury Park.	
Finsbury Park to King's Cross.	

On the following conditions:—

The tickets are issued on week-days, and are available only on day of issue.

The trains for which they are issued are those appointed to reach the stations to which the tickets are available at or before 8 o'clock in the morning.

The return journey must be made on day of issue, by any third-class train leaving the station to which the ticket was issued after 12 noon.

The fares are the ordinary third-class single fares, but not less than 4*d.* for the double journey is charged in any case.

The tickets are issued at these reduced fares subject to the Company's Byelaws, public notices, and General Regulations, and on the express condition that the holder of any workman's ticket shall not be entitled, under any circumstances, to claim compensation to a greater amount than 100*l.*

These tickets are not available on the North London Railway.

HENRY OAKLEY,
General Manager.

King's Cross Station,
April, 1890.

GREAT WESTERN RAILWAY COMPANY.

There is nothing in the Company's Special Acts requiring them to run workmen's trains, and the traffic on their suburban lines is almost entirely of a residential character, not calling for the running of such trains.

They, however, in conjunction with the Metropolitan Company run workmen's trains over the Hammersmith and City Line, of which they are owners jointly with the Metropolitan Company.

The trains so running are formed of stock belonging to the Metropolitan Company, and all the particulars connected with them have been furnished by that Company.

LONDON AND NORTH-WESTERN RAILWAY COMPANY.

Workmen's trains and fares in Metropolitan District.

The London and North-Western Railway Company are under no statutory obligations to run workmen's trains beyond the requirements contained in section 3 of the Cheap Trains Act of 1883.

The cheap trains run by that Company for the conveyance of workmen at reduced fares are as follows:—

- (a.) 5.15 a.m. Willesden Junction to Broad Street (North London train).
- (b.) 5.35 „ Chalk Farm to Euston (trip in connexion with the above).
- (c.) 7.2 „ Willesden Junction to Broad Street (North London train).
- (d.) 7.30 „ Willesden Junction to Euston.
- (a.) Cheap tickets issued by this train from Willesden, Queen's Park, Kilburn, and Loudoun Road to Broad Street, and all stations, Camden Town to Dalston inclusive; also from Willesden, Queen's Park, Kilburn, and Loudoun Road to Euston (conveyed from Chalk Farm by "b").
- (c.) Cheap tickets issued by this train from Willesden, Queen's Park, and Kilburn to Broad Street.
- (d.) Cheap tickets issued by this train from Willesden, Queen's Park, Kilburn and Loudoun Road to Euston.

Workmen's tickets are also issued by the 6.0 a.m. *ordinary* train from Watford to Euston (6.27 a.m. ex. Willesden) between the following points:—

Sudbury	} to Euston.	Willesden	} to Broad Street and
Willesden		Kilburn	
Queen's Park		Queen's Park	
Kilburn		Loudoun Road	
Loudoun Road			
			all stations, Cam-
			den Town to
			Dalston inclusive.

Fares and Distances.

From	Fares.			Distances.		
	To Euston.	To Broad Street.	To Stations between Camden Town and Dalston.	To Euston.	To Broad Street.	To Dalston.
	<i>d.</i>	<i>d.</i>	<i>d.</i>			
Sudbury - - - -	7	—	—	8 miles.	—	—
Willesden - - - -	4	6	6	5½ „	10 miles.	7¾ miles.
Queen's Park - - -	3	4	4	3¾ „	8½ „	6 „
Kilburn - - - -	2½	4	4	3 „	7½ „	5½ „
Loudoun Road - - -	2	4	4	2½ „	6¾ „	4¾ „

Cheap tickets are issued for the double journey only, and no weekly tickets are issued.

They can be obtained by any person applying for them, and the conditions printed on the back of them are that the Company's liability is limited to 100l.

Composition of North London Company's trains.

Two first-class carriages, two composite carriages, three second-class carriages, three third-class carriages.

Seating capacity:—96 first, 210 second, and 150 third.

Composition of London and North-Western train (7.30 a.m. Willesden to Euston).

Five composite carriages and three third-class carriages.

Seating capacity:—72 first, 64 second, 120 third.

STATEMENT showing the WORKMEN'S DAILY TICKETS issued from STATIONS, LOUDOUN ROAD to SUDBURY inclusive, to EUSTON, &c., during the Months of November and December 1889.

Booking Stations.	Month.	To						Total.	
		Stations, Camden Town to Dalston, both inclusive.		Euston.		Broad Street.			
		No. of Pas-sengers.	Amount.	No. of Pas-sengers.	Amount.	No. of Pas-sengers.	Amount.	No. of Pas-sengers.	Amount.
		£ s. d.			£ s. d.		£ s. d.		£ s. d.
Loudoun Road (for Swiss Cottage) - - -	November	8	0 2 8	102	0 17 0	63	1 1 0	173	2 0 8
Do. do. - - -	December	3	0 1 0	66	0 11 0	58.	0 19 4	127	1 11 4
Kilburn and Maida Vale -	November	194	3 4 8	1,262	13 2 11	601	10 0 4	2,057	26 7 11
Do. do. - - -	December	152	2 10 8	1,112	11 11 8	630	10 10 0	1,894	24 12 4
Queen's Park (West Kilburn) -	November	211	3 10 4	1,590	19 17 6	725	12 1 8	2,526	35 9 6
Do. do. - - -	December	195	3 5 0	1,297	16 4 3	553	9 4 4	2,045	28 13 7
Willesden Junction - -	November	18	0 9 0	2,092	34 17 4	171	4 5 6	2,281	39 11 10
Do. - - -	December	24	0 12 0	1,530	25 10 0	185	4 12 6	1,739	30 14 6
Sudbury and Wembley -	November	—	—	6	0 3 6	—	—	6	0 3 6
Do. do. - - -	December	—	—	7	0 4 1	—	—	7	0 4 1
	November	431	7 6 8	5,052	68 18 3	1,560	27 8 6	7,043	103 13 5
	December	374	6 8 8	4,012	54 1 0	1,426	25 6 2	5,812	85 15 10
Total - - -	- - -	805	13 15 4	9,064	122 19 3	2,986	52 14 8	12,855	189 9 3

STATEMENT showing the WORKMEN'S DAILY TICKETS issued from STATIONS, LOUDOUN ROAD to SUDBURY inclusive, to EUSTON, &c., during the Year 1889.

Booking Stations.	To						Total.	
	Stations, Camden Town to Dalston, both inclusive.		Euston.		Broad Street.			
	No. of Pas-sengers.	Amount.	No. of Pas-sengers.	Amount.	No. of Pas-sengers.	Amount.	No. of Pas-sengers.	Amount.
Loudoun Road (for Swiss Cottage) - - -	88	£ s. d. 1 9 4	599	£ s. d. 4 19 10	1,049	£ s. d. 17 9 8	1,736	£ s. d. 23 18 10
Kilburn and Maida Vale -	2,584	43 1 4	11,331	118 0 8	7,558	125 19 4	21,473	287 1 4
Queen's Park (West Kilburn) -	4,603	76 14 4	16,700	208 15 0	10,792	179 17 4	32,095	465 6 8
Willesden Junction - -	540	13 10 0	22,751	379 3 8	2,033	50 16 6	25,324	443 10 2
Sudbury and Wembley -	—	—	655	19 2 1	—	—	655	19 2 1
Total - -	7,815	134 15 0	52,036	730 1 3	21,432	374 2 10	81,283	1,238 19 1

GEORGE FINDLAY,
General Manager,
London and North-Western Railway Company.

Euston Station, N.W.

MIDLAND RAILWAY COMPANY.

The statutory obligations of the Midland Railway Company with regard to the running of workmen's trains are those contained in the Cheap Trains Act, 1883.

The Midland Company commenced to run a workmen's train from Harringay Park to Moorgate Street, on 2nd March 1885, and it was extended to South Tottenham on the 20th July 1885.

The following is the time-table of the train :—

South Tottenham and Stamford Hill	-	-	dep. 4.55 a.m.
St. Ann's Road	-	-	„ 4.57 a.m.
Harringay Park, Green Lanes	-	-	„ 5.0 a.m.
Crouch Hill	-	-	„ 5.4 a.m.
Hornsey Road	-	-	„ 5.7 a.m.
Upper Holloway	-	-	„ 5.10 a.m.
Junction Road	-	-	„ 5.12 a.m.
Highgate Road	-	-	„ 5.14 a.m.
Kentish Town	-	-	„ 5.18 a.m.
Camden Road	-	-	„ 5.20 a.m.
King's Cross	-	-	- arrive 5.25 a.m.
Farringdon Street	-	-	„ 5.29 a.m.
Aldersgate Street	-	-	„ 5.31 a.m.
Moorgate Street	-	-	„ 5.33 a.m.

The fares and distances are as follows :—

Stations.	King's Cross.		Farringdon Street.		Aldersgate Street.		Moorgate Street.	
	Distance.	Fare.	Distance.	Fare.	Distance.	Fare.	Distance.	Fare.
South Tottenham	m. 6	c. 19	m. 7	c. 10	m. 7	c. 36	m. 7	c. 72
St. Ann's Road	-	5 71	-	6 62	-	7 8	-	7 44
Harringay Park	-	5 8	-	5 79	-	6 25	-	6 61
Crouch Hill	-	4 13	-	5 4	-	5 30	-	5 66
Hornsey Road	-	3 64	-	4 55	-	5 1	-	5 37
Upper Holloway	-	3 33	-	4 24	-	4 50	-	5 6
Junction Road	-	2 76	-	3 67	-	4 13	-	4 49
Highgate Road	-	2 41	-	3 32	-	3 58	-	4 14
Kentish Town	-	1 73	-	2 64	-	3 10	-	3 46
Camden Road	-	1 37	-	2 28	-	2 54	-	3 10

The tickets are available for the return journey in third-class carriages by any Midland train starting from Moorgate Street after 12.0 noon on the day of issue.

The conditions under which the tickets are issued, and which are printed on the back of the tickets, are :—

“This ticket is issued subject to the regulations and conditions stated in the Company's time-tables and bills.”

The number of tickets issued from stations between South Tottenham and Camden Road to King's Cross, Farringdon Street, Aldersgate Street, and Moorgate Street, for the month of—

June 1889, was 8,085,

and

November 1889, was 5,947.

The number of workmen's tickets issued by the Company in London and the suburbs during the year 1889 was 83,188.

The train consists of 16 first and 31 third class compartments. The carriages used form one of the ordinary trains running between Tottenham and Moorgate Street, containing the largest number of third-class carriages.

No complaint has been received of the train being overcrowded.

JOHN NOBLE,

The Assistant Secretary, Board of Trade
(Railway Department), London, S.W.

General Manager,
Midland Railway.

LONDON AND SOUTH-WESTERN RAILWAY.

This Company is not under any statutory obligations to run workmen's trains other than that mentioned in section 3 of Cheap Trains Act of 1883. No statutory obligations.

The stations from which such tickets are issued in the suburban district are as follows:—

From	To	Distance.	Fare per Week.	Trains available by.
		Miles.	s. d.	
Waterloo	Clapham Junction	3 $\frac{3}{4}$	1 6	Any train before 7.30 a.m.
"	Wandsworth	4 $\frac{3}{4}$	2 0	" "
"	Putney	5 $\frac{3}{4}$	2 6	" "
"	Barnes	7	2 6	" "
"	Richmond	9 $\frac{3}{4}$	3 0	" "
"	Kew Bridge	9 $\frac{1}{2}$	3 0	" "
"	Isleworth	12	3 6	" "
"	Hounslow	13 $\frac{1}{2}$	4 0	" "
"	Twickenham	11 $\frac{1}{2}$	3 6	" "
"	Teddington	13 $\frac{1}{2}$	3 6	" "
"	Kingston	15	3 6	" "
"	Wimbledon	7 $\frac{1}{2}$	2 6	" "
"	Malden	9 $\frac{1}{2}$	3 0	" "
"	Surbiton	12	3 6	" "
Queen's Road	Waterloo	2 $\frac{1}{2}$	1 3	5.16, 5.39, 6.4, 6.24, 6.36, 6.57, 7.22, 7.35, 7.40, and 7.45 a.m.
Clapham Junction	"	3 $\frac{3}{4}$	1 6	5.12, 5.35, 6.0, 6.20, 6.32, 6.53, 7.19, 7.31, and 7.42 a.m.
Wandsworth	"	4 $\frac{3}{4}$	2 0	5.31, 6.29, 6.50, and 7.17 a.m.
East Putney	"	5 $\frac{3}{4}$	2 6	8.22 a.m.
Southfields	"	6 $\frac{3}{4}$	2 6	8.19 a.m.
Wimbledon Park	"	7 $\frac{1}{2}$	2 6	8.16 a.m.
Putney	"	5 $\frac{3}{4}$	2 6	5.27, 6.25, 6.46, and 7.24 a.m.
Barnes	"	7	2 6	5.13, 6.20, 6.42, and 7.20 a.m.
Mortlake	"	8 $\frac{1}{2}$	3 0	5.19 and 6.38 a.m.
Richmond	"	9 $\frac{3}{4}$	3 0	5.14 and 6.33 a.m.
Chiswick	"	8 $\frac{1}{2}$	3 0	6.13, 7.15, and 7.55 a.m.
Kew Bridge	"	9 $\frac{1}{2}$	3 0	6.10, 7.12, and 7.52 a.m.
Brentford	"	10 $\frac{1}{2}$	3 6	6.7, 7.8, and 7.48 a.m.
Isleworth	"	12	3 6	6.3, 7.4, and 7.44 a.m.
Hounslow	"	13 $\frac{1}{2}$	4 0	6.0, 7.0, and 7.40 a.m.
Twickenham	"	11 $\frac{1}{2}$	3 6	5.9 and 6.26 a.m.
Strawberry Hill	"	12 $\frac{1}{2}$	3 6	5.4 and 6.22 a.m.
Teddington	"	13 $\frac{1}{2}$	3 6	5.1, 6.18, and 6.58 a.m.
Kingston	"	15	3 6	4.55, 5.32, 6.12, 6.25, 7.6, and 7.26 a.m.
Fulwell	"	13	4 0	7.49 a.m.
Hampton	"	14 $\frac{1}{2}$	5 0	7.45 a.m.
Earlsfield	"	5 $\frac{3}{4}$	2 0	5.7, 5.54, 7.8, 7.25, 7.49, and 7.58 a.m.
Wimbledon	"	7 $\frac{1}{2}$	2 6	5.2, 5.50, 7.3, 7.20, 7.45, and 7.54 a.m.
Norbiton	"	11 $\frac{1}{2}$	3 6	5.35, 6.28, 7.9, and 7.28 a.m.
Raynes Park	"	8 $\frac{1}{2}$	3 0	6.35, 6.59, 7.17, and 7.35 a.m.
Worcester Park	"	11 $\frac{1}{2}$	3 0	7.38 and 8.13 a.m.
Ewell	"	13	4 0	7.33 and 8.7 a.m.
Malden	"	9 $\frac{1}{2}$	3 0	4.56, 5.39, 6.32, 6.55, 7.14, and 7.32 a.m.
Surbiton	"	12	3 6	4.50, 6.50, and 7.45 a.m.
Thames Ditton	"	14	4 0	4.40, 6.40, and 7.39 a.m.
Hampton Court	"	15	4 0	4.35, 6.35, and 7.35 a.m.
Weybridge	"	19	4 6	7.35 a.m.
Vauxhall	Clapham Junction	2 $\frac{1}{2}$	1 6	Any train before 7.30 a.m.
"	Wandsworth	3 $\frac{1}{2}$	2 0	" "
"	Putney	4 $\frac{1}{2}$	2 6	" "
"	Barnes	5 $\frac{3}{4}$	2 6	" "
"	Richmond	8 $\frac{1}{2}$	3 0	" "
"	Brentford	9 $\frac{1}{2}$	3 6	" "
"	Hounslow	12 $\frac{1}{2}$	4 0	" "
"	Twickenham	10 $\frac{1}{2}$	3 6	" "
"	Teddington	12 $\frac{1}{2}$	3 6	" "
"	Kingston	13 $\frac{1}{2}$	3 6	" "
"	Earlsfield	4 $\frac{1}{4}$	2 0	" "
"	Wimbledon	6	2 6	" "
"	Malden	8 $\frac{1}{2}$	3 0	" "
"	Surbiton	10 $\frac{1}{2}$	3 6	" "
"	Mortlake	7	3 0	" "
Putney	Kingston	9 $\frac{1}{4}$	3 6	" "
Clapham Junction	"	11 $\frac{1}{4}$	3 6	" "
"	Wimbledon	3 $\frac{1}{2}$	2 0	" "

Fares,
distances,
and trains.

The holders of workmen's tickets can only travel with those tickets by the trains shown above, if used by any other train the full ordinary fare is charged.

The tickets are available to return by any train after 5.0 p.m., Saturdays after 12.30 p.m.

Public announcements are issued giving this information.

Conditions
under which
cheap tickets
are issued.

The Company does not issue cheap tickets for a less period than one week. The tickets are used only when going to and returning from work, and only by the appointed trains. They are issued subject to the Company's byelaws and regulations as contained in the time-books and bills, and subject also to this special condition, that the liability of the Company to make compensation for injury, or otherwise, in respect to the holder shall be limited to a sum not exceeding 100*l.*, and the amount of compensation (within that limit) shall be determined by an arbitrator to be appointed by the Board of Trade. The use of the ticket by the holder will be taken as evidence of a special contract upon such condition. These conditions are printed on the back of the tickets.

The tickets are available in the third-class carriages only, and the amount of luggage is understood to be limited to the usual workmen's hand-basket of tools.

Number of
tickets
issued.

The number of weekly tickets issued in October 1889 was 13,514, and in November 1889, 15,388. Of this number 3,454 were issued between Clapham Junction and Waterloo in October, and 4,227 in November.

The total number of tickets issued for the year ending 1889 was 158,738.

Making up
of trains.

There are three trains formed as workmen's trains, -viz. :—

1. 4.15 a.m. from Surbiton to Waterloo (which also forms the 6.0 a.m. from Waterloo to Surbiton). The carrying capacity is as under :—

6 3rd-class carriages, carrying 360 3rd-class passengers.

4 3rd-class carriages, carrying 200 3rd-class passengers.

2 composite carriages, carrying 24 1st-class and 40 2nd-class passengers.

1 3rd-class break, carrying 30 3rd-class passengers.

Thus providing 590 3rd-class seats.

2. The 7.35 a.m. train from Hampton Court to Waterloo—

11 3rd-class carriages, 600 3rd-class seats.

2 composite carriages, 24 1st and 40 2nd class seats.

3. The 4.55 a.m. train from Kingston to Waterloo—

14 3rd-class carriages, 570 seats.

2 composite carriages, 18 1st and 40 2nd class seats.

These trains fully meet the requirements of the traffic, and are never overcrowded.

Third-class
season
tickets.

Third-class season tickets, available for three months, are issued between the following stations at the under-mentioned rates, with a deposit of 2*s.* 6*d.* on each ticket.

		£	s.	d.
Waterloo and Clapham Junction	- - -	1	2	6
„ Wandsworth	- - -	1	10	0
„ Earlsfield	- - -	1	12	6

These tickets are not subject to the reduction of 10 or 15 per cent. allowed on family tickets, nor are they issued at half-price to scholars, students, and others.

SOUTH-EASTERN RAILWAY COMPANY.

This Company is not under any statutory obligations to run workmen's trains.

No statutory obligations.

The following workmen's trains are now running :—

Details of trains running.

Workmen's trains, January 1890.

UP.

(No. 1.) At 5.17 a.m. from Maze Hill, calling at all stations, and reaching London Bridge at 5.31 and Charing Cross at 5.48.

(No. 2.) At 4.55 a.m. from Plumstead, viâ New Cross, calling at all intermediate stations except Spa Road, and reaching London Bridge at 5.37 and Charing Cross at 5.52.

(No. 3.) At 5.20 a.m. from Dartford, viâ Maze Hill, reaching London Bridge at 6.10 and Charing Cross at 6.25.

This train does not call at stations between Maze Hill and London Bridge.

(No. 4.) At 6.0 a.m. from Maze Hill, calling at all stations to London Bridge, where it arrives at 6.20 and at Charing Cross at 6.35.

(No. 5.) At 6.27 a.m. from Blackheath, calling at Lewisham, St. John's, and New Cross to London Bridge, where it is due at 6.50 and Cannon Street at 6.50.

DOWN.

At 4.55 a.m. from Cannon Street, viâ Maze Hill, calling at all stations, and reaching Woolwich Dockyard at 5.23, Woolwich Arsenal at 5.32, and Erith at 5.48.

For the return journey the tickets are available by any train after 4.0 p.m., and after 12 noon on Saturdays.

The Company also issues quarterly third-class tickets between the London stations and all stations as far as Plumstead on the Greenwich and North Kent lines, and also to Dartford and Gravesend, and between Ladywell and Catford Bridge on the Mid-Kent line, which tickets are available by any train ; but only at the stations for which issued, and locally between stations on the Charing Cross line.

The rates for third-class quarterly tickets are—

Fares and distances.

				£	s.	d.
Between London stations and	Spa Road	-	-	1	5	0
"	"	"	Deptford	-	12	6
"	"	"	Greenwich	-	17	6
"	"	"	Maze Hill	-	2	0
"	"	"	New Cross	-	12	6
"	"	"	St. John's	-	15	0
"	"	"	Lewisham	-	17	6
"	"	"	Blackheath	-	2	2
"	"	"	West Combe Park	-		
"	"	"	Charlton	-		
"	"	"	Woolwich	-		
"	"	"	Plumstead	-	2	10
"	"	"	Dartford	-		
"	"	"	Gravesend	-	3	0
"	"	"	Lady Well	-	2	0
"	"	"	Catford Bridge	-		

The heaviest train is the 4.55 a.m. down. It seats 546 passengers, and the average number by it daily in November last was 509, that being the total number of tickets issued from *all* stations by the train.

In the year 1889 the Company issued 480,000 workmen's tickets, representing 960,000 journeys, and the total number issued for the months of November and December 1889 was 75,700, representing 151,400 journeys.

LONDON, TILBURY, AND SOUTHEEND RAILWAY.

This Company is not under any statutory obligations to run workmen's trains other than those mentioned in section 3 of the Cheap Trains Act of 1883.

Under this Company's Act of 1882, section 50, they may run workmen's trains, and at their option discontinue such trains if they think fit. If the trains are run under this section compensation for injury is limited.

The Company is running the following workmen's trains on week days:—

From				By Train at			
				a.m.	a.m.	a.m.	a.m.
Barking	-	-	dep.	5 0	6 10	—	6 53
East Ham	-	-	„	5 3	6 13	—	6 57
Upton Park	-	-	„	5 6	6 16	6 50	7 0
Plaistow	-	-	„	5 9	6 19	6 55	—
Bromley	-	-	„	5 13	6 23	6 59	7 7
Stepney	-	-	arr.	5 18	6 28	7 5	7 13
Fenchurch Street	-	-	„	5 23	6 33	7 10	7 18

Third-class workmen's tickets are issued by the above trains, and are available for the return journey on the day of issue only by any train after 4 p.m., and on Saturdays after 12 noon at the following fares :—

From Barking, East Ham, Upton Park, or Plaistow to Stepney, or Fenchurch

Street and back, or from Barking, East Ham, or Upton Park to Bromley

From Bromley to Stepney or Fenchurch Street and back	-	-	-	2d.
--	---	---	---	-----

Third-class return cheap tickets for London on week days are also issued by the following trains at reduced ordinary fares:—

	From					By Train at	
						a.m.	a.m.
Barking	-	-	-	-	dep.	7 11	—
East Ham	-	-	-	-	”	7 15	—
Upton Park	-	-	-	-	”	7 18	7 45
Plaistow	-	-	-	-	”	7 21	7 50
Bromley	-	-	-	-	”	7 25	7 54

The tickets are available for the return journey on the day of issue only by any train after 4 p.m. and on Saturdays after 12 noon.

The 5 a.m. train from Barking consists of 17 vehicles, with sitting room accommodation for 490 third-class passengers.

The 6.10 a.m. train from Barking consists of 12 vehicles, with sitting room accommodation for 340 third-class passengers.

The 6.53 a.m. train from Barking consists of 17 vehicles, with sitting room accommodation for 590 third-class passengers.

The 6.50 a.m. train from Upton Park consists of 14 vehicles, with sitting room accommodation for 440 third-class passengers.

The number of return workmen's tickets issued in November 1889 was 44,429.

December 37,318,
the smaller number in the latter month being due to the Christmas holidays.

The total number for the year 1889 was 557,037.

The trains are made up to suit the requirements of the traffic, but there are occasions when one train may have a larger or smaller number of passengers than usual.

LONDON: Printed by EYRE and SPOTTISWOODE,
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For Her Majesty's Stationery Office.

REPORT BY THE BOARD OF TRADE

OF THEIR

PROCEEDINGS

UNDER THE

TRAMWAYS ACT, 1870, AND THE GAS AND WATER
WORKS FACILITIES ACT, 1870,

During the Session of 1890.

Presented to both Houses of Parliament by Command of Her Majesty.



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1890.

Session 1890.

REPORT by the BOARD OF TRADE of their PROCEEDINGS under the TRAMWAYS ACT, 1870, and the GAS AND WATER WORKS FACILITIES ACT, 1870, during the SESSION of 1890.

TRAMWAYS.

The number of applications to the Board of Trade for Provisional Orders under the Tramways Act, 1870, made in December 1889 for the then ensuing Session of Parliament, was 13.

The following is a list of these applications :—

- Aldershot and Farnborough (Extensions).
- Bradford and District (Extensions).
- Bradford Corporation (Extensions).
- Drypool and Marfleet Steam (Purchase and Working).
- Dudley, Netherton, Old Hill, and Cradley (Abandonment).
- Lea Bridge, Leyton, and Walthamstow (Extension).
- National Rifle Association, Bisley Common Tramway (New Line).
- North Staffordshire (Extensions and Amendments).
- Norwich (Abandonment).
- Poole and Bournemouth (New Line).
- Tong Local Board (New Line).
- Warboys and Puddock Drove (New Line).
- Worcester (Transfer and Abandonment).

Of these applications, nine (Aldershot and Farnborough; Bradford and District, Bradford Corporation; Lea Bridge, Leyton, and Walthamstow; National Rifle Association; North Staffordshire; Poole and Bournemouth; Tong; Warboys and Puddock Drove, sought for authority to construct new or additional Tramways; two (Norwich and Dudley, Netherton, &c.) to abandon schemes previously sanctioned, with the release of the deposit fund; one (Worcester) to authorise the transfer of certain Tramways open for traffic and the abandonment of certain other authorised Tramways, with the release of the deposit money; and one (Drypool and Marfleet) for power to purchase and work a portion of the lines of another Company.

The length of new or additional line sought to be authorised was 18 miles 49 chains, at an estimated cost of 97,455*l*.

In every case where it was proposed to authorise new Tramways an inspection of the route was made by one of the Board of Trade Inspecting Officers, and various recommendations made by him were met by alterations in the plans or by amendments in the Orders.

Aldershot and Farnborough.—A portion of this Tramway was proposed to be laid on property belonging to the War Department, and as the Promoters were unable to produce the consent of that Department the application was not proceeded with.

North Staffordshire.—The Corporation of Longton, who were the sole local and road authority, refused to consent to the proposed new line, which was, in consequence, dropped, and the remaining object of the Order having been attained by mutual agreement the application was withdrawn.

Worcester.—This application had a double object :—(1), to authorise the transfer to the City of Worcester Tramways Company, Limited, of the Tramways constructed and opened for public traffic under the Worcester Tramways Orders, 1881 and 1885; and

(2), to authorise the abandonment of the lines authorised by the Worcester Tramways Order, 1887, and the release of the deposit money. The Corporation of Worcester strongly opposed both the transfer and the abandonment, contending, as regards the transfer, that the price proposed to be paid by the new Company for the Tramways was so excessive as to make it improbable that the Company would be able to maintain and work the lines in a satisfactory manner. After careful consideration the Board of Trade declined to sanction the transfer, but sanctioned the abandonment and release of deposit.

Lea Bridge, Leyton, and Walthamstow.—The length of the proposed extension Tramway was 34 chains 50 links, of which 33 chains or thereabouts were within the jurisdiction of the Hackney District Board of Works and the London County Council, who consented to the Order, while the remaining length of 1 chain 50 links or thereabouts was within the jurisdiction of the Leyton Local Board, who withheld their consent, but did not lodge any statement of objections.

The Promoters thereupon applied to the Board of Trade to dispense with the consent of the Leyton Local Board under the provisions of Section 5 of the Tramways Act, 1870, and the Board of Trade being satisfied after inquiry that two-thirds in length of the proposed Tramway were consented to by the Local and Road Authorities, and having a report from the Inspecting Officer to the effect that he saw no objection to the line, the consent of the Leyton Local Board was dispensed with, and a special report made to Parliament as required by the Act.

Poole and Bournemouth.—The Bournemouth Improvement Commissioners having withheld their consent to this Order, the Promoters applied that such consent might be dispensed with. The Board of Trade accordingly appointed an officer to hold an inquiry at Bournemouth. From his report it appeared that, of a total length of proposed Tramway amounting to 4 miles 59 chains, a length of 3 miles 74·35 chains, or more than the required two-thirds, had been consented to by the Local and Road Authorities. The Inspecting Officer was of opinion, however, that the Promoters had not shown sufficient reason for the portion of Tramway in Bournemouth to warrant the Board of Trade in dispensing with the consent of the Commissioners. On consideration of this report, the Board of Trade decided to grant the Order, but inserted a proviso to the effect that the line in question should not be commenced except with the consent in writing of the Bournemouth Improvement Commissioners or their successors.

Of the 13 applications made 11 were granted, and Provisional Orders made containing such amendments as the Department found necessary or expedient.

The subjoined list gives the titles of the Orders, states the gauge where new Tramways are authorised, and indicates (by an asterisk) the cases in which any form of mechanical power was authorised:—

- *Bradford and District Tramways, 4 ft.
- *Bradford Corporation, 4 ft.
- Drypool and Marfleet.
- Dudley, Netherton, Old Hill, and Cradley.
- *Lea Bridge, Leyton, and Walthamstow, 4 ft. 8½ in.
- *National Rifle Association, Bisley Common Tramway, 4 ft. 8½ in. (or less).
- Norwich.
- *Poole and Bournemouth, 3 ft. 6 in.
- *Tong Local Board, 4 ft.
- *Warboys and Puddock Drove, 4 ft. 8½ in.
- Worcester.

Two Bills to confirm the Tramway Provisional Orders were introduced into the House of Commons on the 13th May. In that House petitions were deposited against the Drypool and Marfleet Order and the Bradford Corporation Order (No. 1 Bill) by the National Telephone Company, and against the Poole and Bournemouth Order (No. 2 Bill) by the Western Counties and South Wales Telephone Company, with the result that a clause for the protection of the Telephone Companies was inserted in the Drypool and Marfleet and Poole and Bournemouth Orders.

In the House of Lords the Bills met with no opposition, and they received the Royal Assent on the 4th August.

GAS AND WATER PROVISIONAL ORDERS.

Twenty-two applications for Provisional Orders under the Gas and Water Works Facilities Act, 1870, were made to the Board of Trade in December 1889, and power was sought in these Orders to raise 227,500*l.* by shares and 57,375*l.* by loan. Of this amount, 105,500*l.* share and 26,625*l.* loan capital related to gas undertakings; 102,000*l.* share and 25,750*l.* loan capital related to water undertakings; and 20,000*l.* share and 5,000*l.* loan capital related to a combined gas and water undertaking.

The following is a list of the applications:—

Gas.

Alton.	Stourbridge.
Barnoldswick.	Studley.
Hollingworth.	Tonbridge.
Hoylake and West Kirby.	Ware.
Huntingdon and Godmanchester.	Wellingborough.
Llandrindod.	York Town and Blackwater.
Sheffield.	

Gas and Water.

Aldershot.

Water.

Camborne.	Mid-Kent.
Caton.	Stockport and District.
Frith Hill, Godalming, and Farncombe.	Todmorden.
Leatherhead and District.	Usk.

GAS, AND GAS AND WATER.

Gas.

Seven of the 13 applications for Gas Orders were in respect of undertakings already in existence, but without Parliamentary authority, and sought for such authority to maintain and continue the existing works, and to continue the manufacture and supply of gas, viz.:—Alton, Barnoldswick, Hollingworth, Huntingdon and Godmanchester, Studley, Ware, and York Town and Blackwater. The Barnoldswick Order further sought for power to construct additional works.

The Llandrindod Order was promoted by individuals who wished to construct works for the manufacture and supply of *water-gas*.

The five remaining applications related to undertakings already authorised by Parliament, and sought the following powers:—

The Hoylake and West Kirby Order to raise additional capital, the Sheffield Order to construct additional works, and to create a superannuation fund for the officers and servants of the Company, the Stourbridge Order to construct additional works, the Tonbridge Order to raise additional capital and to construct additional works, and the Wellingborough Order to extend the authorised limits of supply.

Gas and Water.

The Aldershot Order related to a joint gas and water undertaking constituted by Act of Parliament, the Company seeking for authority to raise additional capital and to construct additional gasworks.

Objections were lodged against several of the Orders, but it was not found necessary to hold any local inquiry. The objections were, however, duly considered, and the applications in some cases were modified and amended. In the case of the Stourbridge Order, the Promoters not being satisfied with the Order in the form as settled by the Board of Trade, decided not to proceed with it.

The following Reports relating to the Barnoldswick Gas Order and the Llandrindod Water-Gas Order were presented to Parliament :—

“ BARNOLDSWICK GAS ORDER.

“ The Board of Trade have to report, in compliance with Section 4 of the Gas and Water Works Facilities Act, 1870, that they have made a Provisional Order in the case of the application of the Promoters of the Barnoldswick Gas Provisional Order, notwithstanding that the consent of the Local Authority in whose district the proposed new works will be situated has not been obtained.

“ The application was made by the Barnoldswick Gas and Light Company (Limited) for authority to maintain and continue their existing Gas Works, to construct additional works, and to make and supply gas within the townships of Barnoldswick, Coates, Salterforth, and Thoruton, in the West Riding of the County of York. The Skipton Union Rural Sanitary Authority, in whose district the additional works will be situated, have decided not to give their consent thereto. The Promoters have, in consequence, appealed to the Board of Trade to exercise the power conferred upon them by Section 4 of the Gas and Water Works Facilities Act, 1870, and to dispense with the consent of the Rural Sanitary Authority.

“ The Board of Trade communicated with the Rural Sanitary Authority upon the subject, and were informed that the consent was refused on the grounds ‘ that the ratepayers are wishful that the township of Barnoldswick should be constituted a Local Government District, and that, should such a district be formed, this authority is of opinion that it is most desirable that the Board to be elected should be perfectly free to act for the township as to lighting, and not be prejudiced by this authority assenting to the above Order.’

“ The Company were already supplying gas, and, under these circumstances, the Board of Trade informed the Rural Sanitary Authority that they were of opinion that the grounds upon which the consent was refused were not sufficient to warrant the refusal of the application, and that they proposed to dispense with the consent.

“ The Board of Trade accordingly dispensed with the consent of the Rural Sanitary Authority, and granted the Order.”

“ LLANDRINDOD WATER-GAS PROVISIONAL ORDER.

“ So far as the Board of Trade are aware, the application for this Order is the first instance in which Parliament has been asked to grant statutory authority for the supply of water-gas, and they have therefore thought it right to direct the special attention of Parliament thereto.

“ The Promoters are Richard Paul Agar Swettenham, William Norman Swettenham, and William Bubton, and the limits within which the provisions of the Order will be in force are the parishes and places of Llandrindod, Llandrindod Wells, Cefnlllys, and Trefonen, all in the county of Radnor.

“ The local and road authorities interested have all given their consent.

“ The regulations and restrictions imposed upon an ordinary coal-gas undertaking applying for Parliamentary powers appeared to the Department to be inadequate in the case of water-gas, and it became necessary to consider and settle what special conditions should be imposed.

“ In settling the conditions which appear in the Order now submitted to Parliament, the Board of Trade have had the benefit of the advice of Sir Henry Roscoe, M.P., and of Dr. Stevenson, of Guy’s Hospital.

“ It would appear that water-gas is practically inodorous, and contains a large proportion of carbonic oxide, which is highly dangerous to human life. It was therefore essential, in the interests of public safety, that means should be adopted to secure the proper odourisation of the gas, so that any leakage or escape might be easily detected, and with this object clause 18 has been inserted in the Order, which provides as follows :—

‘ All gas supplied by the Undertakers shall, if not sufficiently odourised by the materials employed in the manufacture thereof to render any leakage or escape of the gas easily detected, be passed through a locked chamber or reservoir containing mercaptan, sulphurised acetone, or such other pungent odourant as may be approved by the Board of Trade in writing, not accessible to those engaged in the manufacture, so that the gas may be impregnated or mixed with

‘ a sufficient quantity of such odorant before reaching the gasholder, and that the gas supplied therefrom may be readily detected in the event of any leakage or escape from the mains or pipes, either outside or inside the premises supplied.’

“ The other special provisions in the Order are, clause 21, as to testing gas; clause 22, which gives power to the Board of Trade, upon the application of the sanitary authorities, to appoint an inspector or inspectors for the purpose of seeing that no leakage from the main or pipes takes place, and that the gas is properly odorised; clause 23, which empowers the Board of Trade to modify or suspend the powers granted by the Order, if the Undertakers at any time fail to supply gas in accordance with the provisions of the Order, or with a due regard to the public safety; clause 24, which prescribes the penalty to which the Undertakers shall be liable if they fail to supply gas in accordance with the provisions of the Order; and clause 25, which enables the Board of Trade to revoke the Order as to the whole or any part of the limits of supply if the manufacture and supply of gas cannot be carried on without danger to public safety.”

The subjoined list shows the Orders in which the sliding scale of price and dividend was inserted, and the amount at which the initial price per 1,000 cubic feet was fixed :—

	s.	d.		s.	d.	s.	d.
Alton - - - - -	4	6	Tonbridge - - - - -	3	9	and 3	6
Hollingworth - - - - -	4	6	Ware - - - - -	4	9		
Hoylake and West Kirby - - - - -	5	0	York Town and Black-				
Huntingdon and Godmanchester	4	7	water - - - - -	4	9		
Studley - - - - -	5	6					

The maximum price to be charged for gas was fixed in the Barnoldswick Order at 5s. per 1,000 feet, with power to the Board of Trade, after the expiration of three years, to alter the maximum price or to substitute a sliding scale. Maximum price.

In the Llandrindod Water-Gas Order the maximum price was fixed at 5s., 4s., and 3s. 6d. per 1,000 cubic feet, according to the aggregate amount of gas supplied in any year. In the Wellingbrough Order the Undertakers were authorised to charge within the extended limits of supply a maximum price of 1s. in excess of the price charged within the existing district.

The minimum illuminating power of the gas to be supplied was fixed at 15 candles, except in the Llandrindod Water-Gas Order, in which 16 candles were prescribed. Illuminating power.

The usual clauses as to the sale by auction or tender of the additional capital; limits of dividend; the creation of insurance and reserve funds; testing of gas (except in the Tonbridge Order, in which special provisions which had been agreed upon with the Local Board were inserted); the quantity of land to be taken by agreement, &c. were inserted, and the Gasworks Clauses Acts, 1847 and 1871, were incorporated where necessary. Clauses.

The supply of gas in bulk beyond the limits of supply under certain limitations was authorised in the Tonbridge, Ware, York Town and Blackwater, and Aldershot Orders; the latter Order also sanctioning the supply of water in bulk beyond the limits of supply.

In the Llandrindod Order, which was promoted by individuals, a clause was inserted providing that no sale or assignment of the Undertaking should have effect until approved by the Board of Trade.

Three Bills intitled the Gas Orders Confirmation (No. 1) Bill, the Gas Orders Confirmation (No. 2) Bill, and the Gas and Water Orders Confirmation Bill, to confirm the Gas Orders and the Gas and Water Order made by the Board of Trade (other than the Stourbridge Order, which, as stated above, the Promoters declined to accept) were introduced into the House of Lords, the two former on the 1st May and the latter on the 6th May. As the result of a conference between the Board of Trade and the authorities of the Private Bill Offices of the House of Lords and the House of Commons, the clauses in the Sheffield Order in the Gas Orders Confirmation (No. 1) Bill relating to the establishment of a Superannuation Fund were struck out. Confirmation of Orders.

The Aldershot Order in the Gas and Water Orders Confirmation Bill was petitioned against in the House of Lords by the North Camp and Farnborough District Gas Company, the Woking Water and Gas Company, and the Aldershot Local Board. The Select Committee to whom the Bill was referred amended the clause in the Order relating to the supply of gas and water in bulk beyond the limits of supply to meet the

objections of the two companies, and satisfied the objections of the Local Board by the insertion of clauses, which had previously been agreed upon between the Promoters and the Local Board, fixing a sliding scale of price and dividend, the initial price being fixed at 3s. 8d. per 1,000 feet, and the increase or decrease of dividend for every 1d. of reduction or increase of the initial price being fixed at 3s. per cent. instead of the usual amount of 5s. per cent.

The York Town and Blackwater Gas Order in the Gas Orders Confirmation (No. 1) Bill was petitioned against in the House of Commons by the North Camp and Farnborough District Gas Company (Limited). The petition was, however, withdrawn upon the Promoters agreeing to certain amendments being made in the Order, by which they would be prevented from supplying gas within the district of the North Camp and Farnborough District Gas Company, Limited.

The Gas Orders Confirmation (No. 1) Bill and the Gas and Water Orders Confirmation Bill met with no further opposition, and received the Royal Assent on August 14th and August 4th respectively.

The Gas Orders Confirmation (No. 2) Bill passed through the various stages in both Houses without opposition, and received the Royal Assent on July 25th.

WATER.

Six of the eight applications for Water Orders were in respect of undertakings already possessing statutory authority, and sought to obtain the following additional powers; viz.,—

The Camborne Order to raise additional capital and to construct additional works, the Frith Hill, Godalming, and Farncombe Order to construct additional works and to extend the authorised limits of supply, the Mid-Kent Order to construct additional works, to raise additional capital, and to extend the authorised limits of supply, and the Leatherhead, Stockport, and Todmorden Orders to raise additional capital only.

Of the two remaining applications the Caton Order sought to maintain and continue existing works and to construct additional works, and the Usk Order to construct waterworks and to supply water.

After giving due consideration to the objections, the Board of Trade granted an Order in each case.

In the Mid-Kent Order, the Vestry of the parish of Aylesford, in part of whose district the Promoters proposed to extend their limits of supply, declined to consent to the application. The Promoters asked the Board of Trade to dispense with the consent of the Vestry under section 4 of the Gas and Water Works Facilities Act, 1870. In order to enable the Board of Trade to form an opinion as to the expediency of complying with this request they appointed Major F. A. Marindin, R.E., C.M.G., to hold a local inquiry. That officer reported that he did not consider the Promoters had shown sufficient cause for the proposal to include in their limits part of the parish of Aylesford in the face of the strong objection to the proposal by the inhabitants. At the same time, he did not think the existing supply satisfactory, but the inhabitants had expressed their willingness to take steps to provide an improved supply if it were found to be necessary. The Board of Trade accordingly declined to include any portion of the parish of Aylesford within the extended limits of supply authorised by the Order.

In all the Orders granting power to charge rates for the supply of water for domestic purposes, the rateable value of the houses, as ascertained by the Valuation List in force, was fixed as the basis on which such rates should be levied. In no case were the Undertakers exempted from giving a constant supply of water as prescribed by the Waterworks Clauses Act, 1847.

In the Caton and Usk Orders power was reserved to the Board of Trade to alter the rates allowed by the Order after the expiration of six years, upon the application of any Local Authority having jurisdiction within the limits of supply or of twenty or more inhabitant householders.

In the Frith Hill, Godalming, and Farncombe, Mid-Kent, Usk, and Caton Orders a clause provided that if, after the expiration of six years (seven years in the Caton Order), the Undertakers were not furnishing a sufficient supply of water within any portion of their authorised limits, the Local Authority having jurisdiction might provide a supply in accordance with the provisions of the Public Health Act, 1875,

Objects of
application.

Orders
granted.

Local
Inquiry.

Rates and
constant
supply.

Clauses.

or any company, body, or person might apply for an Act of Parliament or Provisional¹ Order for authority to supply water.

In the Caton Order a clause provided for the purchase of the Undertaking under certain conditions by the Local Authority after the expiration of seven years.

In the Camborne, Caton, and Usk Orders, the Undertakers were authorised to supply water in bulk beyond the limits of supply, subject to certain limitations.

In the Caton Order a clause requiring the Undertakers to fix a water gauge of the size specified in the Order, and to keep it full of water, was inserted for the protection of the riparian proprietors on the banks of the stream from which the Undertakers propose to take water. The Promoters of the Caton Order being individuals, and not a company, a clause was inserted providing that no sale or assignment of the Undertaking should have effect until approved by the Board of Trade.

The additional capital authorised was in each case required to be offered for sale by auction or tender. Where necessary, the Waterworks Clauses Acts, 1847 and 1863, were incorporated, and clauses inserted as to regulations for preventing waste, misuse, or contamination of water, supply of water by measure, and the quantity of land to be taken by agreement, &c.

Two Bills to confirm the Water Orders, intituled the Water Orders Confirmation (No. 1) Bill, and the Water Orders Confirmation (No. 2) Bill, were introduced in the House of Lords on May 1st and May 6th respectively.

After passing through the several stages in both Houses without opposition, they received the Royal Assent on July 25th.

Board of Trade,
Whitehall Gardens,
18 August 1890.

COURTENAY BOYLE.

TABLE.

The following table shows the number of Orders made by the Board of Trade under the Tramways Act, 1870, and the Gas and Water Works Facilities Act, 1870, from the passing of those Acts down to the present time:—

Year.	Tramway Orders.			Gas and Water Orders.			Fees received with applications.
	Applied for.	Made by Board of Trade.	Confirmed by Parliament.	Applied for.	Made by Board of Trade.	Confirmed by Parliament.	
1871	-	26	*4	23	19	19	£ 1,715
1872	-	18	†10	18	17	17	1,260
1873	-	15	‡17	14	14	14	1,015
1874	-	10	6	16	14	14	910
1875	-	2	2	12	10	10	490
1876	-	7	6	23	22	22	1,050
1877	-	12	8	16	14	13	980
1878	-	25	15	22	20	20	1,645
1879	-	32	21	24	24	24	1,960
1880	-	35	27	15	15	15	1,750
1881	-	39	27	19	17	17	2,030
1882	-	27	§23	12	11	11	1,365
1883	-	30	§24	16	16	16	1,610
1884	-	24	18	17	17	17	1,435
1885	-	16	13	17	85	14	1,155
1886	-	20	¶13	21	21	¶20	1,435
1887	-	17	12	14	13	13	1,015
1888	-	14	13	24	22	22	1,330
1889	-	7	6	14	14	14	735
1890	-	13	11	22	22	**21	1,225
Total	-	389	272	359	337	333	26,110

* Eight others were suspended.

† Four others were suspended and two withdrawn.

‡ Including eight suspended in 1871 and 1872.

§ One was afterwards struck out of the Bill by direction of the Board of Trade.

|| One was not advertised in time, and was therefore not introduced into the Confirmation Bill.

¶ One Tramway Order and one Gas Order were withdrawn, but confirmed on a fresh application in the session 1887.

** One was dropped by the Promoters, and was therefore not introduced into a Confirmation Bill.

TRAMWAYS PROVISIONAL ORDERS (No. 1) BILL.

MEMORANDUM stating the Nature of the PROPOSALS contained in the
PROVISIONAL ORDERS included in the TRAMWAYS PROVISIONAL ORDERS
(No. 1) BILL.

1. *Bradford Corporation*.—Authorising the Corporation of Bradford to construct additional Tramways, and to borrow 30,000 *l.*, repayable in 30 years.

2. *Drypool and Marfleet*.—Authorising the Drypool and Marfleet Steam Tramways Company, limited, to purchase a portion of the Hull Street Tramways, and to use steam power thereon, with the consent of the Corporation of Hull and the Board of Trade.

3. *Dudley, Netherton, Old Hill, and Cradley*.—Authorising the abandonment of the tramways authorised by the Dudley, Netherton, Old Hill, and Cradley Tramways Order, 1887, and the release of the deposit fund.

4. *National Rifle Association (Bisley Common Tramway)*.—Authorising Lord Wantage, the Earl of Wemyss and March, and Sir Henry Fletcher, on behalf of the National Rifle Association, to construct a tramway in the parishes of Pirbright and Woking, in the county of Surrey, on a gauge of 4 feet 8½ inches, to be worked, with the consent of the Board of Trade, by mechanical power. Tolls for passengers not to exceed sixpence for any distance.

5. *Norwich*.—Authorising the abandonment of the tramways authorised by the Norwich Tramways Order, 1887, and the release of the deposit fund.

6. *Tong Local Board*.—Authorising the Tong Local Board to construct a tramway in their district on a gauge of 4 feet, to be worked, with the consent of the Board of Trade, by mechanical power, and to borrow 8,000 *l.*, repayable in 30 years. Tolls for passengers not exceeding one penny per mile, with a minimum charge of two pence.

7. *Worcester*.—Authorising the abandonment of the tramways authorised by the Worcester Tramways Order, 1887, and the release of the deposit fund.

Courtenay Boyle,
An Assistant Secretary. Board of Trade.

Board of Trade. Whitehall Gardens, }
23 May 1890. }

TRAMWAYS PROVISIONAL ORDERS
(No. 1) BILL.

MEMORANDUM stating the Nature of the
Proposals contained in the PROVISIONAL
Orders included in the TRAMWAYS PROVISIONAL
Orders (No. 1) BILL.

(Presented by Her Majesty's Command.)

*Ordered, by The House of Commons, to be Printed,
3 June 1890.*

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[Price 4d.]

197.

H.-T. 6. 30.

TRAMWAYS PROVISIONAL ORDERS (No. 2) BILL.

MEMORANDUM stating the Nature of the PROPOSALS contained in the PROVISIONAL ORDERS included in the TRAMWAYS PROVISIONAL ORDERS (No. 2) BILL.

1. *Bradford and District (Extensions).*—Authorising the construction of a tramway in the vicinity of Bradford, in the West Riding of the county of York, on a gauge of 4 feet, to be worked, with the consent of the Board of Trade, by mechanical power. Tolls for passengers not exceeding one penny per mile, with a minimum charge of two pence.

2. *Lea Bridge, Leyton, and Walthamstow.*—Authorising the construction of an additional tramway in Leyton and Hackney, to be worked, with the consent of the Board of Trade and Local Authorities, by any mechanical power, except steam power.

3. *Poole and Bournemouth.*—Authorising the construction of tramways in Poole and Bournemouth, on a gauge of 3 feet 6 inches, to be worked, with the consent of the Board of Trade, by mechanical power. Tolls for passengers not exceeding one penny per mile 2nd class, and two pence per mile 1st class, with minimum charge as for two miles

4. *Warboys and Puddock Drove.*—Authorising the construction of a tramway in the parishes of Warboys and Ramsey, in the county of Huntingdon, on a gauge of 4 feet 8½ inches. Tolls for passengers not exceeding one penny per mile, with minimum charge of two pence.

Courtenay Boyle,
An Assistant Secretary, Board of Trade.

Board of Trade, Whitehall Gardens,]
23 May 1890. j

TRAMWAYS.

REPORT by the Board of Trade with respect
to the Application of the Promoters of the LEA
BRIDGE, LEYTON, and WALTHAMSTOW TRAMWAYS
PROVISIONAL ORDER.

(Presented pursuant to Act of Parliament.)

Ordered, by The House of Commons, to be Printed,
19 May 1890

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[*Price ½ d.*]

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TRAMWAYS (STREET AND ROAD).

RETURN to an Order of the Honourable The House of Commons,
dated 4 July 1890;—*for*,

RETURN “of STREET and ROAD TRAMWAYS Authorised by Parliament, showing the Amount of CAPITAL Authorised, Paid up, and Expended, the Length of TRAMWAY Authorised, and the Length Open for the Public Conveyance of PASSENGERS, down to the 30th day of June 1890; the GROSS RECEIPTS, WORKING EXPENDITURE, and NET RECEIPTS; the Number of PASSENGERS Conveyed, and the Number of MILES Run by Cars, during the Year ended the 30th day of June 1890; together with the Number of HORSES, ENGINES, and CARS at that Date (in continuation of Parliamentary Paper, No. 238, Session 1889).”

(*Sir Michael Hicks Beach.*)

Ordered, by The House of Commons, to be Printed,
4 July 1890.

LONDON:
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21, DRURY STREET, GLASGOW; or
HODGES, FIGGIS, & Co., 104, GRAFTON STREET, DUBLIN.

COMPARATIVE TABLE. - - - - -

STATEMENT showing the Amount of CAPITAL Authorised, Paid up, and Expended for TRAMWAYS in each LINE Open, the Number of PASSENGERS Carried, the GROSS and NET RECEIPTS,

	ENGLAND AND WALES. (For Years ended 30th June.)							SCOTLAND. (For Years ended 30th June.)						
	1878.	1882.	1884.	1886.	1888.	1889.	1890.	1878.	1882.	1884.	1886.	1888.	1889.	1890.
Capital Authorised:	£.	£.	£.	£.	£.	£.	£.	£.	£.	£.	£.	£.	£.	£.
By Shares - - -	3,810,512	6,662,480	8,556,837	10,396,467	10,866,418	10,482,004	10,148,229	655,000	825,027	876,478	972,486	900,051	908,625	900,725
By Loans and Debentures.	1,347,121	3,160,784	3,654,093	4,031,442	4,228,292	4,326,291	4,250,463	534,469	646,762	586,761	705,927	743,427	766,294	786,498
TOTAL - - - £.	4,657,633	9,813,264	12,210,430	14,427,909	15,094,710	14,808,295	14,398,692	1,189,469	1,471,789	1,463,239	1,678,413	1,643,478	1,674,919	1,687,223
Capital Paid up:														
Share - - - -	2,403,346	4,566,971	6,663,863	7,636,079	8,251,455	7,846,992	7,769,791	310,790	572,054	625,202	642,619	676,354	717,299	743,284
Loan and Debenture -	587,102	1,953,988	2,355,622	2,682,297	3,080,402	3,258,340	3,235,550	302,716	439,232	450,272	477,126	520,921	535,579	531,985
TOTAL - - - £.	2,990,448	6,520,959	8,998,985	10,218,376	11,331,857	11,105,332	10,994,341	613,506	1,011,286	1,075,474	1,119,745	1,197,275	1,252,878	1,275,269
Total Capital Expended -	3,121,268	6,304,509	8,998,925	10,345,879	11,315,740	11,171,451	11,136,027	657,943	1,038,852	1,101,614	1,157,559	1,246,593	1,287,125	1,366,938
Length of Line open for Public Traffic.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.
	194	444	612	706	736	758	753	43	64	70	73	79	81	84
Number of Horses belonging to the Companies.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
	6,269	13,741	17,102	19,388	19,976	21,369	21,681	2,122	3,062	3,314	3,499	4,223	3,908	4,126
Number of Locomotive Engines belonging to the Companies.	6	62	186	422	479	496	534	8	10	11	17	19	21	19
Number of Cars belonging to the Companies.	802	1,794	2,426	2,772	2,815	2,923	3,030	210	343	373	384	392	399	423
Total Number of Passengers carried.	89,442,108	187,875,779	252,612,893	302,790,839	340,511,905	379,580,965	418,399,936	47,680,256	56,137,402	61,324,499	59,528,415	63,744,042	70,583,150	76,008,545
Gross Receipts - - -	£.	£.	£.	£.	£.	£.	£.	£.	£.	£.	£.	£.	£.	£.
	791,677	1,516,845	1,919,197	2,110,918	2,248,117	2,375,032	2,573,535	253,011	314,205	339,249	335,900	359,333	396,971	417,350
Working Expenses - - -	579,471	1,225,906	1,486,098	1,639,390	1,755,345	1,831,846	1,932,444	212,960	216,902	241,719	243,693	276,586	277,746	296,493
Net Receipts - - -	166,012	290,939	433,099	471,528	492,772	543,186	641,091	40,051	97,303	97,530	92,207	82,747	119,225	120,857

Note.—The figures relating to capital for the year 1889 were considerably affected by the transfer of old undertakings to new Companies, with reduced capital, and by certain other re-arrangements of capital; and the results for 1890 have been further affected by the new proprietors of certain other undertakings neglecting to furnish Returns.

COMPARATIVE TABLE.

Division of the UNITED KINGDOM on the 30th June in certain Years from 1878 to 1890; also the LENGTH of and the WORKING EXPENDITURE in each of the same Years.

IRELAND. (For Years ended 30th June.)							UNITED KINGDOM. (For Years ended 30th June.)							
1878.	1882.	1884.	1886.	1888.	1889.	1890.	1878.	1882.	1884.	1886.	1888.	1889.	1890.	
£.	£.	£.	£.	£.	£.	£.	£.	£.	£.	£.	£.	£.	£.	Capital Authorised:
591,637	1,047,500	1,256,000	1,221,500	1,314,000	1,314,000	1,377,500	4,557,149	8,525,007	11,688,815	12,590,453	13,080,469	12,704,629	12,426,454	By Shares.
147,379	253,490	320,666	312,666	331,666	331,666	339,666	2,028,962	4,061,036	4,561,520	5,060,036	5,303,385	5,423,251	5,376,627	By Loans and De- bentures.
739,016	1,300,990	1,576,666	1,534,166	1,645,666	1,645,666	1,717,166	6,586,111	12,586,043	16,250,335	17,640,488	18,383,854	18,127,880	17,803,081	- - - TOTAL.
														Capital Paid up:
403,010	811,668	825,996	925,962	1,030,231	1,047,077	1,080,090	3,117,146	6,950,693	8,114,661	9,104,680	9,958,040	9,611,363	9,582,165	Share.
28,500	85,390	107,666	125,401	131,301	151,676	152,326	918,318	2,478,610	2,893,660	3,284,424	3,732,624	3,946,596	3,919,861	Loan and Debenture.
431,510	897,058	933,662	1,051,363	1,161,532	1,198,753	1,232,416	4,035,464	8,429,303	11,008,121	12,389,504	13,690,664	13,556,963	13,502,026	- - - TOTAL.
														Total Capital Ex- pended.
428,139	918,424	954,013	1,069,603	1,173,352	1,206,015	1,232,804	4,207,350	8,261,815	10,989,552	12,573,041	13,735,685	13,664,591	13,735,769	
Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Length of Line open for Public Traffic.
32	56	70	86	89	110	111	269	564	752	865	904	949	948	
No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	Number of Horses be- longing to the Com- panies.
831	1,327	1,368	1,648	1,633	1,783	1,912	9,222	13,130	21,784	24,535	25,832	27,060	27,719	
-	4	10	13	16	22	22	14	76	207	452	514	539	575	Number of Locomotive Engines belonging to the Companies.
112	215	239	284	294	323	348	1,124	2,352	3,038	3,440	3,501	3,645	3,801	
3,878,869	13,746,379	16,857,013	21,838,270	24,740,098	27,432,147	31,060,847	146,001,223	257,760,060	330,794,405	384,157,524	428,996,045	477,596,268	526,369,328	Total Number of Pas- sengers carried.
£.	£.	£.	£.	£.	£.	£.	£.	£.	£.	£.	£.	£.	£.	
100,777	139,300	162,309	183,520	188,849	208,221	223,858	1,145,465	1,970,350	2,420,755	2,630,338	2,796,299	2,980,224	3,214,743	Gross Receipts.
75,884	112,985	124,222	138,473	143,503	157,089	173,863	868,315	1,555,793	1,862,039	2,021,556	2,175,434	2,266,681	2,402,800	Working Expenses.
24,893	26,315	38,087	45,047	45,346	51,132	49,995	230,956	414,557	568,718	608,782	620,865	713,543	811,943	Net Receipts.

	Capital Expenditure on Lines and Works Open for Traffic.	Total Expenditure on Capital Account.	Length Open for Traffic.			Number of Undertakings.
			Double.	Single.	Total.	
TRAMWAYS belonging to Local Authorities	£. * 2,112,392	£. * 2,911,419	M. CH. 146 1	M. CH. 97 61	M. CH. 243 62	29
TRAMWAYS belonging to other than Local Authorities	£. † 8,215,125	£. † 10,824,350	269 15	435 24	704 39	129
TOTAL, UNITED KINGDOM	10,327,517	13,735,769	415 16	533 5	948 21	158

* Under the Tramways Act, 1870, Local Authorities are prohibited from working Tramways, and these figures include, therefore, several cases, the amounts expended by their Lessees on buildings and equipment for working the lines. (*Under special powers the Huddersfield Corporation work their own Tramways.*)

† These figures include cost of buildings and equipment in respect of certain Local Authorities' lines worked in conjunction with other lines.

Note.—In the following pages where the words "Corporation," "Local Board," or "Board of Police" occur in the name of the tramways, they imply that the lines belong to the Local Authority, though not worked by them, except in the Huddersfield case.

RETURN of STREET and ROAD TRAMWAYS Authorised by Parliament, showing the Amount Length Open for the Public Conveyance of PASSENGERS, down to the 30th June 1890; the PASSENGERS Conveyed, and the Number of MILES Run by Cars, during the Year ended

PART I. - - - - -

RETURN of STREET and ROAD TRAMWAYS Authorised by Parliament, showing the Amount the Length Open for the Public Conveyance

NAME OF TRAMWAY, AND GAUGE.	Special Acts, or Acts confirming Provisional Orders, relating to the Tramways.	CAPITAL AUTHORISED.			CAPITAL PAID UP.		
		By Shares.	By Loans.	TOTAL.	By Shares.	By Loans (including Debenture Stock).	TOTAL.
		* Mechanical Power Authorised (subject in most cases to Board of Trade approval).					
ENGLAND AND WALES:		£.	£.	£.	£.	£.	£.
Accrington Corporation * 4 ft.	45 & 46 Vict. c. 118 -	{ Corporation Return : — 45,000 45,000 Company's Return : 60,000 - 60,000		-	35,800	35,800	1
Afford and Sutton * 2 ft. 6 ins.	43 & 44 Vict. c. 168 - 45 & 46 Vict. c. 183.	No Return received. Company in Liquidation.					3
Barrow-in-Furness * 4 ft.	47 & 48 Vict. c. 107 - 51 & 52 Vict. c. 64.	50,000	16,666	66,666	45,160	14,400	59,560 4
Barton, Eccles, Winton, and Monton Local Board. 4 ft. 8½ ins.	40 & 41 Vict. c. 124 -	-	17,000	17,000	-	17,000	17,000 5
Bath (a) 4 ft.	43 & 44 Vict. c. 172 -	(b) 8,810	-	8,810	(b) 8,810	-	8,810 6
Birkdale and Southport * 4 ft. 8½ ins.	43 & 44 Vict. c. 172 - 45 & 46 Vict. c. 138.	40,000	-	40,000	8,910	13,500	22,410 7
Birkenhead - 4 ft. 8½ ins.	35 & 36 Vict. c. 127 - 36 & 37 Vict. c. 239. 40 & 41 Vict. c. 187. 42 & 43 Vict. c. 186.	No Return received. Company in Liquidation					8
Birmingham and Aston * 3 ft. 6 ins.	43 & 44 Vict. c. 173 - 45 & 46 Vict. c. 101. 47 & 48 Vict. c. 112.	100,000	13,000	113,000	60,000	4,500	64,500 9
Birmingham and Midland * 3 ft. 6 ins.	(Birmingham and Western Districts Orders): 44 & 45 Vict. c. 163. 45 & 46 Vict. c. 101. 46 & 47 Vict. c. 47. 51 & 52 Vict. c. 64.	500,000	39,893	539,893	119,680	38,900	168,680 10
Birmingham Central * 3 ft. 6 ins.	33 & 34 Vict. c. 78 - 33 & 34 Vict. c. 104. 35 & 36 Vict. c. 157. 40 & 41 Vict. c. 26. 42 & 43 Vict. c. 76. 43 & 44 Vict. c. 173. 44 & 45 Vict. c. 163. 45 & 46 Vict. c. 101. 46 & 47 Vict. c. 47. 47 & 48 Vict. c. 107. 48 & 49 Vict. c. 103. 50 Vict. c. 22. 50 & 51 Vict. c. 196.	500,000	162,572	662,572	487,716	112,800	600,516 11
Birmingham Corporation * 3 ft. 6 ins.	35 & 36 Vict. c. 157 - 37 & 38 Vict. c. 183. 43 & 44 Vict. c. 173 (Bir- mingham and Aston Order). 44 & 45 Vict. c. 163 (Bir- mingham and Western Districts Order). 45 & 46 Vict. c. 101 (Bir- mingham and Aston and Birmingham and Suburban Orders). 46 & 47 Vict. c. 47 (Bir- mingham and Western Districts and North Bir- mingham Orders). 47 & 48 Vict. c. 107 (North Birmingham and South Birmingham Orders). 48 & 49 Vict. c. 103 (Bir- mingham Central and Birmingham Corpora- tion Orders).	-	(d) 169,656	169,656	-	169,656	169,656 12
Blackburn and Over Darwen * 4 ft.	42 & 43 Vict. c. 225 -	50,000	12,500	62,500	44,592	-	44,592 13
Blackburn Corporation * (e) 4 ft.	45 & 46 Vict. c. 243 - 50 & 51 Vict. c. 46. 51 & 52 Vict. c. 11.	85,000	20,000	105,000	81,100	19,980	101,080 14

(a) No Return having been received this year, the last Return made is repeated.

(b) Amount expended on the line by the Patent Cable Tramways Corporation, Limited.

(d) Amount raised.

(e) The Tramways were constructed and equipped by the leasing Company.

(c) Purchase-money.

of CAPITAL Authorised, Paid up, and Expended, the Length of TRAMWAY Authorised, and the GROSS RECEIPTS, WORKING EXPENDITURE, and NET RECEIPTS; the Number of 30th June 1890; together with the Number of HORSES, ENGINES, and CARS at that Date.

PART I.

of CAPITAL Authorised, Paid up, and Expended, the Length of TRAMWAY Authorised, and of PASSENGERS, down to the 30th June 1890.

CAPITAL EXPENDED.									Length of Tramway Authorised (exclusive of Expired Powers).			Length of Tramway Open for Public Conveyance of Passengers.		
On Lines and Works open for Traffic (including Land, Buildings, &c.).	On Lines and Works in course of Construction (including Land, Buildings, &c.).	On Horses.	On Locomotive Engines.	On Cars.	Legal and Parliamentary.	Any other Expenses not included in the foregoing.	TOTAL.		Double Line.	Single Line.	TOTAL.	Double Line.	Single Line.	TOTAL.
£.	£.	£.	£.	£.	£.	£.	£.	M. CH.	M. CH.	M. CH.	M. CH.	M. CH.	M. CH.	M. CH.
1	33,500	-	-	-	-	1,800	-	35,300	1 32	4 46	5 78	1 25	4 6	5 31
2	34,184	-	-	11,200	3,232	365	3,774	62,756	0 57	3 28	4 5	0 57	3 28	4 5
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	51,326	-	-	5,214	2,026	1,661	4,724	64,941	1 45	5 17	6 62	0 70	3 21	4 11
5	17,000	-	-	-	-	-	-	17,000	-	2 10	2 10	-	2 10	2 10
6	(c) 7,700	-	325	-	589	80	116	8,810	0 41	1 16	1 57	0 41	1 16	1 57
7	16,815	-	467	-	912	-	161	17,855	0 73	4 33	5 26	0 29	2 30	2 49
8	-	-	-	-	-	-	-	-	5 79	3 5	9 4	5 21	2 65	8 6
9	40,647	-	450	15,564	3,429	6,074	2,608	68,762	1 14	2 52	3 66	1 14	2 52	3 66
10	125,498	-	-	19,588	5,250	3,105	2,495	161,936	2 4	6 76	9 0	2 4	6 76	9 0
11	320,832	-	26,206	58,993	45,220	132,466	13,843	597,560	5 70	9 29	15 19	3 9	5 5	8 14
12	171,512	-	-	-	-	749	-	172,261	14 70	7 28	22 18	13 51	5 75	19 46
13	30,618	-	-	6,833	3,006	5,502	1,994	47,953	0 40	4 55	5 15	0 40	4 55	5 15
14	66,511	1,236	2,940	14,000	5,510	1,794	12,813	104,804	1 35	10 49	12 4	1 29	7 4	8 33

PART I.—RETURN of Street and Road Tramways, showing Amount of Capital Authorised, Paid up,

NAME OF TRAMWAY, AND GAUGE.	Special Acts, or Acts confirming Provisional Orders, relating to the Tramways.	CAPITAL AUTHORISED.			CAPITAL PAID UP.				
		By Shares.	By Loans.	TOTAL.	By Shares.	By Loans (including Debenture Stock).	TOTAL.		
		* Mechanical Power Authorised (subject in most cases to Board of Trade approval).							
ENGLAND AND WALES—continued.		£.	£.	£.	£.	£.	£.		
Blackpool Corporation* 4 ft. 8½ ins.	47 & 48 Vict. c. 112-	{	Corporation Return : 20,000	20,000	-	13,435	13,435	1	
			Lessees' Return : 30,000	30,000	20,023	-	20,023	2	
Bolton and Suburban* 4 ft. 8½ ins.	41 & 42 Vict. c. 231 - 51 & 52 Vict. c. 95.	{	Bolton Corporation Return : 70,000	70,000	-	62,000	62,000	3	
			Astley Bridge Local Board Return : 9,500	9,500	-	9,078	9,078	4	
			Farnworth Local Board Return : 13,000	13,000	-	12,200	12,200	5	
			Kearsley Local Board Return : 15,000	15,000	-	1,910	1,910	6	
					-	37,249	37,249	7	
Bootle Corporation* 4 ft. 8½ ins.	44 & 45 Vict. c. 105 - 47 & 48 Vict. c. 112.	-	45,000	45,000	-	37,249	37,249	7	
Bradford and Shelf* 4 ft.	48 & 49 Vict. c. 66 -	{	(a) North Bierley Local Board Return : 8,000	8,000	-	8,000	8,000	8	
			Shelf Tramway Company's Return : 5,000	5,000	3,468	-	3,468	9	
Bradford Corporation* 4 ft.	43 & 44 Vict. c. 173 - 46 & 47 Vict. c. 131. 50 Vict. c. 21. 51 & 52 Vict. c. 64.	{	Corporation Return : 146,100	146,100	-	76,475	76,475	10	
			(b) Bradford Tramways and Omnibus Company's Return : 80,000	15,000	95,000	39,600	10,300	43,900	11
			Bradford and Shelf Tramway Company's Return : 20,000	-	20,000	13,600	-	13,500	12
Brentford and District 4 ft. 8½ ins.	48 & 49 Vict. c. 80 - 50 & 51 Vict. c. 41.	-	100,000	25,000	125,000	1,770	-	1,770	13
Brighton and Shoreham* (formerly Brighton District) (c). 3 ft. 6 ins.	45 & 46 Vict. c. 89 -	-	10,000	-	10,000	8,890	-	8,890	14
Bristol* (d) - 4 ft. 8½ ins.	35 & 36 Vict. c. 158 - 38 & 39 Vict. c. 167. 39 & 40 Vict. c. 150. 40 & 41 Vict. c. 124. 42 & 43 Vict. c. 193. 43 & 44 Vict. c. 172. 44 & 45 Vict. c. 164. 45 & 46 Vict. c. 138. 50 & 51 Vict. c. 196.	-	150,000	75,000	225,000	140,000	29,000	169,000	15
Burnley and District* 4 ft. 8½ ins.	42 & 43 Vict. c. 193 - 45 & 46 Vict. c. 138. 50 & 51 Vict. c. 196.	-	100,000	25,000	125,000	46,507	23,250	69,757	16
Bury, Rochdale, and Oldham* 3 ft. 6 ins. and 4 ft. 8½ ins.	44 & 45 Vict. c. 164 (Bury and District and Roch- dale Orders). 45 & 46 Vict. c. 101. 47 & 48 Vict. c. 164. 48 & 49 Vict. c. 72. 50 & 51 Vict. c. 9.	-	42,000	101,320	143,320	41,984	101,320	143,304	17
Cambridge Street 4 ft.	42 & 43 Vict. c. 165 - 43 & 44 Vict. c. 172.	-	20,000	5,000	25,000	20,000	1,800	21,800	18
Cardiff - 4 ft. 8½ ins.	34 & 35 Vict. c. 189 - 36 & 37 Vict. c. 197. 41 & 42 Vict. c. 163. 47 & 48 Vict. c. 112. 48 & 49 Vict. c. 66.	-	(e) 135,931	-	135,931	(e) 135,931	-	(e) 135,931	19
Cardiff District and Penarth Harbour* 4 ft. 8½ ins.	43 & 44 Vict. c. 172 - 48 & 49 Vict. c. 66.	-	50,000	-	50,000	19,355	1,600	20,955	20
Chesham, Boxmoor, and Hemel Hemp- sted.* 4 ft. 8½ ins.	51 & 52 Vict. c. 189 - 52 & 53 Vict. c. 165.	-	96,000	26,000	122,000	-	-	-	21
Chester - 4 ft. 8½ ins.	41 & 42 Vict. c. 174 -	-	32,000	8,000	40,000	31,320	5,250	37,070	22
Chesterfield (d) - 4 ft. 8½ ins.	43 & 42 Vict. c. 193 -	-	2,000	366	2,366	1,100	261	1,361	23
Coventry and District* 3 ft. 6 ins.	43 & 44 Vict. c. 185 45 & 46 Vict. c. 120. 46 & 47 Vict. c. 140. 47 & 48 Vict. c. 220. 50 & 51 Vict. c. 86.	-	100,000	25,000	125,000	80,000	19,750	99,750	24
Croydon (formerly Croydon and Nor- wood).* 4 ft. 8½ ins.	41 & 42 Vict. c. 224 - 43 & 44 Vict. c. 172. 45 & 46 Vict. c. 166. 46 & 47 Vict. c. 174. 52 & 53 Vict. c. 106.	-	47,000	21,000	68,000	42,017	19,970	61,987	25

(a) No Return having been received this year from the Local Board, last year's Return is repeated.

(b) This Company has also other undertakings, all of which, with the Tramways, are amalgamated in its books. This Return is therefore compiled mainly upon estimates.

(c) The Company purchased the undertaking, plant, &c., of the Brighton District Tramways Company, with the sanction of the Board of Trade, and entered into possession last November.

and Expended; Length of Tramway Authorised and Open, &c., to 30th June 1890—continued.

CAPITAL EXPENDED.								Length of Tramway Authorised (exclusive of Expired Powers).			Length of Tramway Open for Public Conveyance of Passengers.		
On Lines and Works Open for Traffic (including Land, Buildings, &c.).	On Lines and Works in course of Construction (including Land, Buildings, &c.).	On Horses.	On Locomotive Engines.	On Cars.	Legal and Parliamentary.	Any other Expenses not included in the foregoing.	TOTAL.	Double Line.	Single Line.	TOTAL.	Double Line.	Single Line.	TOTAL.
£.	£.	£.	£.	£.	£.	£.	£.	M. CH.	M. CH.	M. CH.	M. CH.	M. CH.	M. CH.
12,553	-	-	-	-	582	-	13,435	0 49	1 30	1 79	0 49	1 30	1 79
11,590	-	-	3,137 (fixed generators, &c.)	1,785	1,591	2,541	20,694						
58,024	-	-	-	-	1,659	2,153	61,836						
8,839	-	-	-	-	239	-	9,078	0 27	1 13	1 40	0 27	1 13	12 63
7,314	-	-	-	-	503	-	7,817	0 67	1 13	2 6	0 62	0 10	
1,406	-	-	-	-	503	-	1,909	0 9	0 16	0 25	0 9	0 16	
37,249	-	-	-	-	380	-	37,629	2 65	1 23	4 14	2 51	0 49	3 20
8,000	-	-	-	-	-	-	8,000	2 1	-	2 1	2 1	-	2 1
3,464	-	-	-	-	-	-	3,464	0 5	0 52	0 57	0 6	0 52	0 57
71,695	400	-	-	-	2,433	-	74,528	5 54	6 53	12 27	5 54	0 53	12 27
14,786	-	1,800	17,988	7,830	550	463	43,417						
4,672	-	-	10,320	3,037	-	1,151	19,230						
-	-	-	-	-	2,216	-	2,216	1 18	5 6	6 24	-	-	-
6,770	-	990	100	1,030	-	-	8,890	0 65	3 72	4 57	0 61	3 61	4 42
124,410	-	12,600	-	13,845	11,116	9,924	171,895	4 65	6 50	11 35	4 62	6 20	11 2
58,013	27	-	9,745	3,045	373	-	71,203	1 62	6 73	8 55	1 19	5 73	7 12
106,004	-	-	22,900	Included in previous Column.	13,214	1,029	143,147	8 64	27 22	36 6	6 38	23 64	30 22
25,000	-	-	Details of Capital Expenditure not given			-	25,000	0 54	2 0	2 54	0 54	2 0	2 54
(e) 135,931	-	-	Details cannot be supplied			-	(e) 135,931	2 48	4 46	7 14	2 48	4 46	7 14
15,650	-	-	-	-	688	5,340	21,678	0 33	2 6	2 39	0 31	2 2	2 33
-	-	-	-	-	-	-	-	0 13	8 14	8 27	-	-	-
31,470	-	2,474	-	2,086	-	290	36,320	0 79	1 31	2 30	0 79	1 31	2 30
830	-	130	-	406	43	36	1,445	0 18	1 0	1 18	0 18	1 0	1 18
94,993	-	-	Details not given			-	94,993	1 14	4 46	5 60	1 14	4 46	5 60
68,000	-	-	-	-	-	-	(f) 68,000	1 30	9 33	10 63	1 30	5 33	6 63

(d) No Return having been received this year, the last Return made is repeated.

(e) Amount expended upon the Tramways and equipment, and the purchase of the omnibus business of Messrs. Andrews & Son.

(f) The whole of the undertaking having been taken over by the new Company for the amount of 68,000*l.*, it is impossible to give these divisions.

PART I.—RETURN of Street and Road Tramways, showing Amount of Capital Authorised, Paid up,

NAME OF TRAMWAY, AND GAUGE.	Special Acts, or Acts confirming Provisional Orders, relating to the Tramways.	CAPITAL AUTHORISED.			CAPITAL PAID UP.		
		By Shares.	By Loans.	TOTAL.	By Shares.	By Loans (including Debenture Stock).	TOTAL.
* Mechanical Power Authorised (subject in most cases to Board of Trade approval).							
ENGLAND AND WALES—continued.		£.	£.	£.	£.	£.	£.
Derby - - - - - 4 ft.	42 & 43 Vict. c. 193 -	55,000	-	55,000	52,930	-	52,930
Dewsbury, Batley, and Birstal * - - 4 ft. 8½ ins.	36 & 37 Vict. c. 197 - 42 & 43 Vict. c. 193.	50,000	-	50,000	38,088	5,000	43,088
Drypool and Marfleet * - - - - 4 ft. 8 ins.	49 & 50 Vict. c. 21 -	12,000	(a) -	12,000	9,500	2,000	11,500
Dudley and Kingswinford * - - - 3 ft. 6 ins.	48 & 49 Vict. c. 102 -	-	-	-	-	-	-
Dudley and Stourbridge * - - - - 3 ft. 6 ins.	44 & 45 Vict. c. 163 - 50 Vict. c. 10.	100,000	-	100,000	58,945	-	58,945
Dudley, Sedgley, and Wolverhampton * 4 ft. 8½ ins.	43 & 44 Vict. c. 172 47 & 48 Vict. c. 112.	No Return received			-	-	-
Exeter (b) - - - - - 3 ft. 6 ins.	44 & 45 Vict. c. 130 -	(c) 2,575	-	2,575	(c) 2,575	-	2,575
Flamborough Head * (b) - - - - 3 ft. 6 ins.	50 & 51 Vict. c. 96 -	25,000	6,250	31,250	815	-	815
Folkestone, Sandgate, and Hythe * - 4 ft. 8½ in.	47 & 48 Vict. c. 168 49 & 50 Vict. c. 118. 51 & 52 Vict. c. 28. 52 & 53 Vict. c. 88.	15,000	3,750	18,750	-	-	-
Gateshead and District* - - - - 4 ft. 8½ ins.	43 & 44 Vict. c. 164 45 & 46 Vict. c. 145. 46 & 47 Vict. c. 141.	80,000	20,000	100,000	80,000	20,000	100,000
Gloucester - - - - - 4 ft.	41 & 42 Vict. c. 231 -	16,000	8,000	24,000	16,000	-	16,000
Gosport, Alverstoke, and Bury Cross * 3 ft.	52 & 53 Vict. c. 111 -	-	-	-	-	-	-
Gravesend, Rosherville, and North- fleet.* 3 ft. 6 ins.	44 & 45 Vict. c. 105 47 & 48 Vict. c. 102.	20,000	11,195	31,195	8,880	11,195	20,075
Great Grimsby - - - - - 4 ft. 8½ ins.	42 & 43 Vict. c. 127 50 Vict. c. 10.	35,000	8,750	43,750	35,000	-	35,000
Harrow Road and Paddington - - - 4 ft. 8½ ins.	49 & 50 Vict. c. 104 -	60,000	15,000	75,000	60,000	15,000	75,000
Hartlepool * - - - - - 4 ft. 6 ins.	46 & 47 Vict. c. 131 47 & 48 Vict. c. 102. 51 & 52 Vict. c. 95.	50,000	13,600	63,600	26,712	13,600	40,312
Highgate Hill * - - - - - 3 ft. 6 ins.	45 & 46 Vict. c. 70 -	No Return received			-	-	-
Huddersfield Corporation * - - - 4 ft. 8½ ins.	43 & 44 Vict. c. 99 45 & 46 Vict. c. 236.	-	100,000	100,000	-	79,000	79,000
Hull Street (c) - - - - - 4 ft. 8½ ins.	35 & 36 Vict. c. 158 38 & 39 Vict. c. 159. 40 & 41 Vict. c. 124. 41 Vict. c. 54.	84,000	21,000	105,000	82,560	15,000	97,560
Ipswich * - - - - - 3 ft. 6 ins.	42 & 43 Vict. c. 193 43 & 44 Vict. c. 172. 44 & 45 Vict. c. 109. 45 & 46 Vict. c. 51.	40,000	10,000	50,000	-	-	32,930
Kelghley * - - - - - 4 ft.	51 & 52 Vict. c. 122 -	23,000	-	23,000	9,223	-	9,223
Lancaster and District * - - - - 4 ft. 8½ in.	52 & 53 Vict. c. 110 -	40,000	-	40,000	9,983	-	9,983
Lea Bridge, Leyton, and Walthamstow 4 ft. 8½ ins. * (b)	44 & 45 Vict. c. 170 47 & 48 Vict. c. 244. 52 & 53 Vict. c. 158.	40,000	10,000	50,000	7,150	-	7,150
Leamington and Warwick - - - - 4 ft. 8½ ins.	42 & 43 Vict. c. 193 45 & 46 Vict. c. 138.	25,000	(g) 8,100	33,100	16,860	8,100	23,950
Leeds (Company) * - - - - - 4 ft. 8½ ins.	34 & 35 Vict. c. 189 35 & 36 Vict. c. 174. 40 & 41 Vict. c. 135. 44 & 45 Vict. c. 150.	250,000	62,250	312,250	160,000	21,220	181,220
Leeds Corporation * - - - - - 4 ft. 8½ ins.	51 & 52 Vict. c. 64 -	-	21,000	21,000	-	16,300	16,300
Leicester - - - - - 4 ft. 8½ ins.	36 & 37 Vict. c. 197 40 & 41 Vict. c. 170. 47 & 48 Vict. c. 80.	100,000	24,000	124,000	95,000	24,000	119,000
Lincoln - - - - - 3 ft. 6 ins.	44 & 45 Vict. c. 164 -	20,000	-	20,000	10,500	-	10,500
Lincolnshire * - - - - - 3 ft. 6 ins.	44 & 45 Vict. c. 164 52 & 53 Vict. c. 110.	100,000	30,000	130,000	3,135	15,450	18,585

(a) Under Company's Articles of Association, power is given to borrow up to any amount not exceeding the nominal capital.

(b) No Return having been received this year, last year's Return is repeated.

(c) Represents the amount paid for the undertaking by the present owner, who bought from the official liquidator of the original Company.

(d) The contract under which this line was constructed was for a lump sum to include equipment.

and Expended; Length of Tramway Authorised and Open, &c., to 30th June 1890—*continued*.

	CAPITAL EXPENDED.								Length of Tramway Authorised (exclusive of Expired Powers).			Length of Tramway Open for Public Conveyance of Passengers.		
	On Lines and Works Open for Traffic (including Land, Buildings, &c.).	On Lines and Works in course of Construction (including Land, Buildings, &c.).	On Horses.	On Locomotive Engines.	On Cars.	Legal and Parliamentary.	Any other Expenses not included in the foregoing.	TOTAL.	Double Line.	Single Line.	TOTAL.	Double Line.	Single Line.	TOTAL.
	£.	£.	£.	£.	£.	£.	£.	£.	M. CH.	M. CH.	M. CH.	M. CH.	M. CH.	M. CH.
1	54,949	-	-	Details of Capital Expenditure not given -				54,949	1 27	3 37	4 64	1 27	3 37	4 64
2	37,405	-	-	25	6,200	2,680	2,281	48,591	0 50	3 58	4 28	0 37	3 68	4 23
3	7,515	-	-	-	4,227	1,950	1,286	125	15,103	0 18	1 12	1 30	0 17	1 10
4	-	-	-	-	-	-	1,821	504	2,325	0 52	2 25	2 77	-	-
5	45,917	-	-	-	6,366	1,914	4,600	333	59,130	0 44	4 48	5 12	0 44	4 48
6	-	-	-	-	-	-	-	-	0 36	5 26	5 62	0 36	5 26	5 62
7	(c) 2,575	-	-	-	-	-	-	2,575	0 26	2 4	2 30	0 26	2 4	2 30
8	-	-	-	-	-	-	813	813	0 26	3 12	3 38	-	-	-
9	-	-	7,293	-	-	-	6,543 (including deposit).	152	13,988	0 12	3 65	3 77	-	-
10	66,000	-	-	-	12,000	4,225	11,600	3,000	96,825	1 55	4 65	6 40	1 55	4 65
11	16,000	-	-	Undertaking purchased for a lump sum -				16,000	0 43	2 36	2 79	0 43	2 33	2 76
12	-	-	-	-	-	-	-	-	0 29	2 6	2 35	-	-	-
13	11,984	-	-	-	-	836	3,965	3,246	20,031	0 17	2 3	2 20	0 17	2 3
14	30,327	-	-	2,535	-	2,030	2,158	-	37,050	1 12	3 66	4 78	1 4	3 63
15	55,210	-	-	3,850	-	3,060	5,414	6,843	74,377	1 60	0 1	1 61	1 60	0 1
16	(d) 29,509	-	-	-	-	-	7,000	-	36,509	0 56	1 65	2 41	0 56	1 65
17	-	-	-	-	-	-	-	-	0 41	0 16	0 57	0 48	0 9	0 57
18	62,352	3,391	-	13,853	4,886	1,891	80	86,453	1 70	16 41	18 31	0 76	10 23	11 19
19	95,877	-	-	4,440	-	7,322	182	-	107,821	1 51	9 14	10 65	1 51	9 14
20	31,030	-	-	614	-	1,300	283	70	33,297	0 68	3 33	4 21	0 68	3 33
21	12,561	-	-	1,079	-	1,078	733	799	16,250	0 62	3 24	4 6	0 55	1 53
22	-	-	19,646	665	-	103	730	1,774	22,918	-	5 69	5 69	-	-
23	(f) 7,150	-	-	-	-	-	-	-	7,150	-	3 38	3 38	-	2 32
24	18,666	-	-	1,229	-	643	1,643	464	22,645	0 23	2 57	3 0	0 23	2 57
25	(h) 142,000	-	-	9,870	15,757	14,236	(i) 2,262	2,982	187,127	6 5	8 28	14 33	6 5	8 28
26	-	-	15,232	-	-	-	-	-	15,232	2 25	1 48	3 73	-	-
27	97,297	-	-	10,291	-	12,093	5,594	-	126,275	2 37	9 0	11 37	1 73	7 1
28	8,625	-	-	298	-	860	420	-	10,203	0 22	1 42	1 64	0 22	1 42
29	-	-	18,565	-	-	-	-	-	18,565	0 54	23 20	23 74	-	-

(e) Company in liquidation.

(f) Paid on account of the purchase of the undertaking of the old Company, and the further equipment thereof.

(g) Amount raised, as power of borrowing on mortgage is not fixed.

(h) Amount of purchase money.

(i) Acts of 1877 and 1881 only.

PART I.—RETURN of Street and Road Tramways, showing Amount of Capital Authorised, Paid up,

NAME OF TRAMWAY, AND GAUGE.	Special Acts, or Acts confirming Provisional Orders, relating to the Tramways.	CAPITAL AUTHORISED.			CAPITAL PAID UP.			
		By Shares.	By Loans.	TOTAL.	By Shares.	By Loans (including Debenture Stock).	TOTAL.	
		* Mechanical Power Authorised (subject in most cases to Board of Trade approval).						
ENGLAND AND WALES—continued.		£.	£.	£.	£.	£.	£.	
Liverpool Corporation * 4 ft. 8½ ins.	31 & 32 Vict. c. 167 33 & 34 Vict. c. 176. 34 & 35 Vict. c. 157. 35 & 36 Vict. c. 122. 38 & 39 Vict. c. 48. 42 & 43 Vict. c. 96. 42 & 43 Vict. c. 193. 43 & 44 Vict. c. 126. 44 & 45 Vict. c. 105. 45 & 46 Vict. c. 92. 46 & 47 Vict. c. 131. 47 & 48 Vict. c. 112. 48 & 49 Vict. c. 145. 51 & 52 Vict. c. 95.	-	-	Corporation Return : — 464,000 464,000 Lessees' Return : 445,000 111,250 556,250	-	310,000	310,000	
Llanelli (b) - 3 ft.	43 & 44 Vict. c. 172	15,000	-	15,000	7,860 (Capitalised profits), 869 l.	-	8,719	
London * 4 ft. 8½ ins.	32 & 33 Vict. c. 94 - 32 & 33 Vict. c. 95. 33 & 34 Vict. c. 167. 33 & 34 Vict. c. 173. 33 & 34 Vict. c. 174. 36 & 37 Vict. c. 55. 36 & 37 Vict. c. 204. 36 & 37 Vict. c. 215. 36 & 37 Vict. c. 223. 43 & 44 Vict. c. 165. 47 & 48 Vict. c. 57. 51 & 52 Vict. c. 144. 52 & 53 Vict. c. 124. 53 Vict. c. 24.	-	480,000	180,000	660,000	480,000	180,000	660,000
London, Camberwell, and Dulwich 4 ft. 8½ ins.	45 & 46 Vict. c. 213 - 46 & 47 Vict. c. 227. 48 & 49 Vict. c. 199. 50 & 51 Vict. c. 183.	-	20,000	5,000	(c) 25,000	20,150	10,000	30,150
London Southern - 4 ft. 8½ ins.	45 & 46 Vict. c. 257 - 47 & 48 Vict. c. 191.	-	102,000	25,500	127,500	90,000	22,500	112,500
London Street - 4 ft. 8½ ins.	33 & 34 Vict. c. 171 36 & 37 Vict. c. 183. 36 & 37 Vict. c. 215. 36 & 37 Vict. c. 221. 40 & 41 Vict. c. 219. 42 & 43 Vict. c. 189. 45 & 46 Vict. c. 163. 47 & 48 Vict. c. 94. 48 & 49 Vict. c. 115. 50 Vict. c. 4. 51 & 52 Vict. c. 78.	-	465,500	121,000	586,500	307,000	72,500	379,500
Manchester Carriage and Tramways Company. 4 ft. 8½ ins.	40 & 41 Vict. c. 124 - 41 & 42 Vict. c. 141. 41 & 42 Vict. c. 163. 42 & 43 Vict. c. 190. 43 & 44 Vict. c. 112. 45 & 46 Vict. c. 138.	-	500,000	125,000	625,000	371,830	114,289	486,119
Manchester Corporation 4 ft. 8½ ins.	38 & 39 Vict. c. 167 - 40 & 41 Vict. c. 124 (Rusholme Local Board Order). 41 & 42 Vict. c. 163. 44 & 45 Vict. c. 105 (Man- chester Corporation and Rusholme Local Board Orders).	-	-	228,000	228,000	-	174,969	(d) 174,969
Manchester, Middleton, and District * - 3 ft. 6 ins.	48 & 49 Vict. c. 197 - 50 Vict. c. 38. 51 & 52 Vict. c. 150. 52 & 53 Vict. c. 183.	-	180,000	37,500	187,500	-	-	-
Middlesbrough and Stockton 4 ft. 8½ ins.	36 & 37 Vict. c. 197 - 38 & 39 Vict. c. 95. 44 & 45 Vict. c. 95.	-	(e) 14,517	-	14,517	(e) 14,517	-	14,517
Morecambe - 4 ft. 8½ ins.	49 & 50 Vict. c. 25 -	-	16,000	4,000	20,000	13,726	300	14,026
Moss Side Local Board - 4 ft. 8½ ins.	41 & 42 Vict. c. 221 -	-	-	11,000	11,000	-	11,000	11,000
Neath and District (b) - 4 ft. 8½ ins.	36 & 37 Vict. c. 197 -	-	35,000	16,000	51,000	26,123	13,230	39,353
Newcastle-upon-Tyne Corporation * 4 ft. 8½ ins.	40 & 41 Vict. c. 151 - 42 & 43 Vict. c. 193. 45 & 46 Vict. c. 172.	-	-	Corporation Return : — 80,000 80,000 Lessees' Return : (g) 39,950 - - 39,950	-	64,500	64,500	
Newport and Parkhurst * 3 ft.	52 & 53 Vict. c. 111 -	-	-	-	-	-	-	
Newport (Mon.) - 4 ft. 8½ ins.	36 & 37 Vict. c. 197 -	-	10,000	5,000	15,000	10,000	1,200	11,200
Newport Pagnell and District * (b) 3 ft. 6 ins.	50 & 51 Vict. c. 123 -	-	40,000	20,000	60,000	19,800	-	19,800

(a) Including goodwill account (243,840 l.), which is being met by the setting aside of at least 3,000 l. per annum.

(b) No Return having been received this year, the last Return made is repeated.

(c) Reduced capital.

(d) The amount expended in excess of amount borrowed was paid out of the rates.

and Expended; Length of Tramway Authorised and Open, &c., to 30th June 1890—continued.

	CAPITAL EXPENDED.								Length of Tramway Authorised (exclusive of Expired Powers).			Length of Tramway Open for Public Conveyance of Passengers.								
	On Lines and Works Open for Traffic (including Land, Buildings, &c.).	On Lines and Works in course of Con- struction (including Land, Buildings, &c.).	On Horses.	On Locomo- tive Engines.	On Cars.	Legal and Parliamen- tary.	Any other Expenses not included in the foregoing.	TOTAL.	Double Line.	Single Line.	TOTAL.	Double Line.	Single Line.	TOTAL.						
	£.	£.	£.	£.	£.	£.	£.	£.	M. CH.	M. CH.	M. CH.	M. CH.	M. CH.	M. CH.						
1	298,557	-	-	-	-	5,012	-	303,569	18	1	10	26	18	1	10	26	28	27		
2	182,162	-	79,989	-	{ Cars, 35,094 Omnibuses, 8,970 }	10,459	(a)245,015	561,689												
3	7,260	-	79	-		684	-	690	8,719	0	21	1	29	1	50	0	60	0	75	
4	442,207	-	109,174	-	47,960	-	15,681	615,022	21	73	1	27	23	20	20	31	1	27	21	68
5	-	24,150	-	-	-	6,000	-	30,150	0	30	2	70	3	20	-	-	-	-	-	
6	111,560	-	Details cannot be given			-	-	111,560	1	73	3	67	5	60	1	73	3	67	5	60
7	317,687	-	40,973	-	25,390	49,704	-	433,754	10	63	6	24	17	7	8	56	4	64	13	40
8	204,979	-	75,631	-	59,640	13,921	-	354,171	21	37	3	52	25	9	21	37	3	52	25	9
9	123,256	-	-	-	-	3,255	360	(d)126,871	17	63	12	17	30	0	18	61	9	45	28	26
10	-	-	-	-	-	-	-	-	0	47	8	55	9	22	-	-	-	-	-	
11	9,510	-	486	2,911	1,207	403	-	14,517	0	24	2	37	2	61	0	24	2	37	2	61
12	11,685	-	580	-	(f)	1,225	600	14,090	0	46	1	64	2	30	0	44	1	64	2	28
13	10,601	-	-	-	-	399	-	11,000	0	65	0	65	1	50	0	65	0	65	1	50
14	31,110	-	1,317	-	1,515	3,139	2,272	39,353	0	23	3	64	4	6	0	22	3	64	4	6
15	63,497	-	-	-	-	253	-	63,750	7	10	5	74	13	4	4	16	7	20	11	26
16	10,500	-	11,550	-	8,400	3,700	5,800	39,950												
17	-	-	-	-	-	-	-	-	0	16	0	80	1	15	-	-	-	-	-	
18	8,445	-	640	-	850	1,816	94	11,845	0	14	1	45	1	59	0	12	1	1	1	13
19	-	34,963	-	-	-	575	600	36,138	0	52	5	39	6	11	-	-	-	-	-	

(e) Amount expended on the tramways.

(f) Cars are purchased on deferred payments.

(g) Capital expended.

PART I.—RETURN of Street and Road Tramways, showing Amount of Capital Authorised, Paid up,

NAME OF TRAMWAY, AND GAUGE.	Special Acts, or Acts confirming Provisional Orders, relating to the Tramways.	CAPITAL AUTHORISED.			CAPITAL PAID UP.		
		By Shares.	By Loans.	TOTAL.	By Shares.	By Loans (including Debenture Stock).	TOTAL.
* Mechanical Power Authorised (subject in most cases to Board of Trade approval).							
ENGLAND AND WALES— <i>continued.</i>		£.	£.	£.	£.	£.	£.
Newton Heath Local Board - - 4 ft. 8½ ins.	41 & 42 Vict. c. 231 - -	- -	30,000	30,000	- -	15,249	15,249
Northampton Street * - - - 3 ft. 6 ins.	43 & 44 Vict. c. 101 - 45 & 46 Vict. c. 110.	40,000	10,000	50,000	40,000	10,000	50,000
North London * - - - - 4 ft. 8½ ins.	42 & 43 Vict. c. 193 45 & 46 Vict. c. 194. 46 & 47 Vict. c. 142. 47 & 48 Vict. c. 192. 50 Vict. c. 39.	147,000	36,750	183,750	146,736	36,730	183,466
North Metropolitan * - - - - 4 ft. 8½ ins.	32 & 33 Vict. c. 101 - 33 & 34 Vict. c. 172. 34 & 35 Vict. c. 179. 36 Vict. c. 78. 37 & 38 Vict. c. 45. 40 & 41 Vict. c. 111. 43 & 44 Vict. c. 97. 45 & 46 Vict. c. 136. 47 & 48 Vict. c. 168. 48 Vict. c. 26. 50 Vict. c. 12. 51 & 52 Vict. c. 122. 53 & 54 Vict. c. .	1,122,000	280,500	1,402,500	1,021,979	255,500	1,277,479
North Shields and Tynemouth District* 3 ft.	42 & 43 Vict. c. 193 (Tyne- mouth and District Order). 45 & 46 Vict. c. 70. 48 & 49 Vict. c. 66 (Tyne- month Order).	6,000	- -	6,000	4,754	- -	4,754
North Staffordshire * - - - - 4 ft.	42 & 43 Vict. c. 193 (Stoke- upon-Trent, &c. Order). 43 & 44 Vict. c. 173. 44 & 45 Vict. c. 105. 45 & 46 Vict. c. 138. 46 & 47 Vict. c. 131. 50 Vict. c. 10.	140,000	20,000	160,000	(b)128,472	17,090	145,562
Nottingham and District * - - - 4 ft. 8½ ins.	40 & 41 Vict. c. 124 - 47 & 48 Vict. c. 112.	80,000	- -	80,000	80,000	29,000	109,000
Oldham, Ashton-under-Lyne, and Hyde District.* 4 ft. 8½ ins.	52 & 53 Vict. c. 111 -	75,000	- -	75,000	- -	- -	- -
Oldham Borough (Corporation) * 4 ft. 8½ ins.	41 & 42 Vict. c. 163 - 45 & 46 Vict. c. 138.	- -	55,000	55,000	- -	48,805	48,805
Oxford (City of) and District - - 4 ft.	42 & 43 Vict. c. 193 - 46 & 47 Vict. c. 133. 50 Vict. c. 21.	40,000	18,800	58,800	33,052	18,800	51,852
Plymouth - - - - 3 ft. 6 ins.	45 & 46 Vict. c. 159 - 47 & 48 Vict. c. 240. 50 Vict. c. 24. 50 Vict. c. 52. 52 & 53 Vict. c. 207.	22,000	5,400	27,400	6,500	- -	6,500
Plymouth, Stonehouse, and Devonport 4 ft. 8½ ins.	33 & 34 Vict. c. 169 - 37 & 38 Vict. c. 72.	(c) 51,128	- -	(c) 51,128	(c) 51,128	- -	51,128
Pontypridd and Rhondda Valley * - 3 ft. 6 ins.	45 & 46 Vict. c. 70 - 51 & 52 Vict. c. 64.	No Return received. Company in liquidation.				—	—
Portsmouth (Borough of), Kingston, Fratton, and Southsea.* 4 ft. 8½ ins.	46 & 47 Vict. c. 187 - 50 & 51 Vict. c. 141.	48,000	12,000	60,000	36,290	9,000	45,290
Portsmouth Street * - - - - 4 ft. 8½ ins. and 3 ft. 6 ins.	33 & 34 Vict. c. 170 - 37 & 38 Vict. c. 183. 39 & 40 Vict. c. 150. 40 & 41 Vict. c. 124. 42 Vict. c. 27. 42 & 43 Vict. c. 118. 44 Vict. c. 46. 46 & 47 Vict. c. 112.	(d)159,695	- -	159,695	(d)159,695	- -	159,695
Preston Corporation and Fulwood Local Board.* 3 ft. 6 ins.	41 & 42 Vict. c. 52 - 43 & 44 Vict. c. 118. 43 & 44 Vict. c. 162. 48 & 49 Vict. c. 35.	Corporation Return :		38,000	- -	26,576	26,576
		Local Board Return :		4,000	- -	2,118	2,118
Reading - - - - 4 ft.	41 & 42 Vict. c. 231 -	50,000	- -	50,000	21,500	- -	21,500
Rossendale Valley * - - - - 4 ft.	45 & 46 Vict. c. 101 (Man- chester, Bury, &c. Order). 50 Vict., Sess. 2, c. 9. 51 & 52 Vict. c. 136. 52 & 53 Vict. c. 214.	80,000	20,000	100,000	42,230	10,000	52,230
St. Helen's and District * - - - 4 ft. 8½ ins.	42 & 43 Vict. c. 192 - 44 Vict. c. 46. 46 & 47 Vict. c. 126.	50,000	- -	50,000	11,741	15,000	26,741

(a) Amount of purchase-money paid by new company to official liquidator of old company, whose last Return of paid-up capital was 18,635 £.

(b) This amount is now reduced by 45,576 £, written off capital under an Order of the Court.

(c) Amount expended upon the tramways and property, and in the purchase of omnibus business.

and Expended; Length of Tramway Authorised and Open, &c., to 30th June 1890—*continued*.

	CAPITAL EXPENDED.								Length of Tramway Authorised (exclusive of Expired Powers).			Length of Tramway Open for Public Conveyance of Passengers.		
	On Lines and Works Open for Traffic (including Land, Buildings, &c.).	On Lines and Works in course of Construction (including Land, Buildings, &c.).	On Horses.	On Locomotive Engines.	On Cars.	Legal and Parliamentary.	Any other Expenses not included in the foregoing.	TOTAL.	Double Line.	Single Line.	TOTAL.	Double Line.	Single Line.	TOTAL.
	£.	£.	£.	£.	£.	£.	£.	£.	M. CH.	M. CH.	M. CH.	M. CH.	M. CH.	M. CH.
1	14,670	-	-	-	-	689	-	15,359	1 60	0 7	1 67	1 60	0 7	1 67
2	35,000	-	2,800	-	2,000	5,500	4,700	50,000	0 68	3 34	4 20	0 68	3 34	4 30
3	147,917	-	40	21,500	7,237	3,324	3,243	183,261	2 50	7 39	10 9	2 48	7 25	9 73
4	1,080,879	Included in previous Column.	124,589	-	60,550	64,633	-	1,330,651	39 77	5 20	45 17	36 77	4 61	41 68
5	(a) 2,500	-	-	-	-	-	-	2,500	0 56	1 70	2 46	0 56	1 70	2 46
6	102,805	-	280	23,991	4,606	2,247	3,241	(b)147,170	2 29	18 32	20 61	0 74	6 6	7 0
7	85,495	-	11,407	917	9,064	2,220	1,397	110,500	7 40	3 0	10 40	7 40	3 0	10 40
8	-	-	-	-	-	-	-	-	-	8 1	8 1	-	-	-
9	47,267	-	-	-	-	715	724	48,706	3 56	4 77	8 53	3 45	4 64	8 29
10	46,069	-	3,010	-	2,257	-	1,422	52,758	1 2	3 0	4 2	1 2	3 0	4 2
11	-	6,000	-	-	220	2,500	700	9,420	0 30	3 20	3 50	-	-	-
12	(c) 51,128	-	-	Details cannot be supplied			-	51,128	-	1 74	1 74	0 12	1 62	1 74
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	41,295	-	-	-	1,810	Not yet ascertained.		2,480	0 57	2 53	3 30	0 57	2 53	3 30
15	(d)159,695	-	-	-	-	-	-	159,695	1 76	14 69	16 65	0 21	11 56	11 77
16	26,576	-	-	-	-	-	-	26,576	0 40	6 31	6 71	0 61	5 79	} 7 61
17	2,105	-	-	-	-	13	-	2,118	-	1 1	1 1	-	1 1	
18	19,486	-	680	-	1,396	1,125	862	23,549	0 49	1 59	2 28	0 66	1 44	2 30
19	38,106	-	-	8,800	2,400	3,513	2,349	55,168	1 10	8 7	9 17	0 60	4 16	4 76
20	19,673	-	-	5,600	1,360	-	106	26,739	-	13 0	13 0	-	8 0	8 0

(d) Amount expended on the tramways, buildings, and equipment, and includes the cost of acquiring several omnibus businesses.

PART I.—RETURN of Street and Road Tramways, showing Amount of Capital Authorised, Paid up,

NAME OF TRAMWAY, AND GAUGE.	Special Acts, or Acts confirming Provisional Orders, relating to the Tramways.	CAPITAL AUTHORISED.			CAPITAL PAID UP.			
		By Shares.	By Loans.	TOTAL.	By Shares.	By Loans (including Debenture Stock).	TOTAL.	
		* Mechanical Power Authorised (subject in most cases to Board of Trade approval).						
ENGLAND AND WALES—continued.		£.	£.	£.	£.	£.	£.	
Salford Corporation * 4 ft. 8½ ins.	38 & 39 Vict. c. 101 48 & 49 Vict. c. 102.	{ — (a) 37,435	Corporation Return : 125,000		125,000	-	90,137	90,137
			Lessees' Return : -		37,435	(a) 37,435	-	37,435
Sheffield Corporation 4 ft. 8½ ins.	35 & 36 Vict. c. 143 -	{ — 80,000	Corporation Return : 80,000		80,000	-	80,000	80,000
			Lessees' Return : 10,000		90,000	80,000	-	80,000
Shipley * 4 ft.	44 & 45 Vict. c. 105 - 48 & 49 Vict. c. 66.	60,000	15,500	75,500	15,175	14,842	30,017	
Southampton Street 4 ft. 8½ ins.	40 & 41 Vict. c. 221 - 51 & 52 Vict. c. 45.	68,000	21,150	89,150	59,380	16,650	76,030	
South Eastern Metropolitan (d) 4 ft. 8½ in.	51 & 52 Vict. c. 188 -	50,000	12,500	62,500	-	-	-	
South Gosforth * 4 ft. 8½ ins.	44 & 45 Vict. c. 105 -	(e) 20,900	-	20,900	(e) 20,900	-	20,900	
South London 4 ft. 8½ ins.	42 & 43 Vict. c. 197 - 43 & 44 Vict. c. 16. 44 & 45 Vict. c. 184. 45 & 46 Vict. c. 192. 46 & 47 Vict. c. 167.	293,000	73,000	366,000	277,110	89,850	366,960	
Southport 4 ft. 8½ ins.	35 & 36 Vict. c. 158 - 39 & 40 Vict. c. 127. 39 & 40 Vict. c. 150.	39,000	10,000	49,000	39,000	-	39,000	
South Shields Corporation *	44 & 45 Vict. c. 105 - 46 & 47 Vict. c. 93.	{ — 3,000	Corporation Return : 18,050		18,050	-	16,887	16,887
			Lessees' Return : -		3,000	3,000	-	3,000
South Staffordshire (formerly South Staffordshire and Birmingham Dis- trict). * 3 ft. 6 ins.	42 & 43 Vict. c. 193 (Staf- fordshire Order). 43 & 44 Vict. c. 172. 43 & 44 Vict. c. 173 (Wal- sall and District Order). 44 & 45 Vict. c. 163 (Dud- ley and Tipton, South Staffordshire, and Wed- nesbury and West Bromwich Orders). 45 & 46 Vict. c. 70 (Staf- fordshire Order). 45 & 46 Vict. c. 101 (Wal- sall and District Order). 47 & 48 Vict. c. 80 (Wal- sall and District Order). 50 Vict. c. 22. 52 & 53 Vict. c. 191.	216,230	50,000	266,230	{ Ordinary, 267,115 Preference, 76,910	33,044	366,069	
Southwark and Deptford 4 ft. 8½ ins.	42 & 43 Vict. c. 73 - 44 & 45 Vict. c. 178. 52 & 53 Vict. c. 148.	170,000	42,500	212,500	129,889	32,500	162,389	
Stockport and Hazel Grove 4 ft. 8½ ins.	52 & 53 Vict. c. 110 -	17,000	3,095	20,095	9,636	3,095	12,731	
Stockton-on-Tees and District * 4 ft.	43 & 44 Vict. c. 172 (Dar- lington and Stockton Orders). 47 & 48 Vict. c. 102. 52 & 53 Vict. c. 92.	100,000	12,000	112,000	69,584	12,000	81,584	
Sunderland (Company) * 4 ft. 8½ ins.	41 & 42 Vict. c. 231 - 42 & 43 Vict. c. 193. 43 & 44 Vict. c. 172. 45 & 46 Vict. c. 70.	80,000	-	80,000	80,000	-	80,000	
Sunderland Corporation * 4 ft. 8½ ins.	42 & 43 Vict. c. 193 -	-	25,000	25,000	-	17,450	17,450	
Swansea * 4 ft. 8½ ins.	37 & 38 Vict. c. 138 - 41 & 42 Vict. c. 147. 42 & 43 Vict. c. 193. 45 & 46 Vict. c. 128.	130,000	13,750	143,750	97,260	9,900	107,160	
Wallasey 4 ft. 8½ ins.	41 & 42 Vict. c. 238 - 49 & 50 Vict. c. 70.	30,000	7,500	37,500	22,240	5,000	27,240	
Walton-on-the-Hill Local Board * 4 ft. 8½ ins.	43 & 44 Vict. c. 173 -	-	35,000	35,000	-	34,000	34,000	
Wantage * 4 ft. 8½ ins.	37 & 38 Vict. c. 183 - 39 & 40 Vict. c. 42.	{ Ordinary, 10,000 Preference, 3,000	-	13,000	{ Ordinary, 8,170 Preference, 3,000	-	11,170	
Wavertree Local Board 4 ft. 8½ ins.	41 & 42 Vict. c. 231 -	-	20,000	20,000	-	10,000	10,000	
West Derby Local Board 4 ft. 8½ ins.	41 & 42 Vict. c. 231 - 45 & 46 Vict. c. 92.	-	41,500	41,500	-	41,500	41,500	

(a) Amount expended by lessees.

(b) Capital expenditure has been reduced by revenue to 80,000 l.

(c) Formation of the company, including payments made by Order of the Court of Chancery, construction and equipment of lines and works open for traffic, Parliamentary and legal expenses, &c.

(d) No Return having been made this year, last year's Return is repeated.

(e) Amount of capital expended.

and Expended; Length of Tramway Authorised and Open, &c., to 30th June 1890—*continued.*

CAPITAL EXPENDED.									Length of Tramway Authorised (exclusive of Expired Powers).			Length of Tramway Open for Public Conveyance of Passengers.										
On Lines and Works Open for Traffic (including Land, Buildings, &c.).	On Lines and Works in course of Con- struction (including Land, Buildings, &c.).	On Horses.	On Locomo- tive Engines.	On Cars.	Legal and Parliamen- tary.	Any other Expenses not included in the foregoing.	TOTAL.		Double Line.	Single Line.	TOTAL.	Double Line.	Single Line.	TOTAL.								
£.	£.	£.	£.	£.	£.	£.	£.		M. CH.	M. CH.	M. CH.	M. CH.	M. CH.	M. CH.								
1	90,137	-	-	-	-	-	90,137	}	9	59	5	14	14	73	9	14	4	12	13	26		
2	-	-	21,335	-	-	16,100	-		37,435													
3	90,507	-	-	-	-	-	90,507	}	9	46	0	58	10	24	9	14	0	20	9	34		
4	51,883	-	14,640	-	-	9,200	8,288		(b) 84,011													
5	(c) 25,859	-	-	-	-	-	-	2,392	28,251	0	27	1	78	2	25	0	27	1	78	2	25	
6	70,451	-	3,783	-	-	4,699	-	-	78,933	0	28	5	52	6	0	-		5	3	5	3	
7	-	-	-	-	-	-	-	-	-	0	49	1	68	2	37	-		-	-	-		
8	13,000	-	4,000	-	-	2,000	1,000	500	20,500	0	29	0	30	0	59	0	29	0	30	0	59	
9	271,321	-	22,569	-	-	13,860	34,412	23,282	365,444	8	23	4	49	12	72	8	23	4	49	12	72	
10	37,480	-	3,410	-	-	4,240	2,650	1,189	(f) 48,919	0	74	5	48	6	42	0	74	5	48	6	42	
11	17,918	-	-	-	-	-	739	1,247	19,904	}	1	29	4	39	5	68	0	64	1	59	3	43
12	-	-	1,196	-	-	1,260	100	881	3,437													
13	310,478	-	1,020	33,718	5,520	9,085	12,088	371,909	10	35	14	70	25	25	9	53	12	78	22	51		
14	141,785	-	11,164	-	-	7,191	7,065	-	167,205	2	60	5	22	6	2	1	9	3	63	4	72	
15	11,406	-	1,170	-	-	1,189	408	342	14,515	0	44	3	20	3	64	0	34	2	42	2	76	
16	74,042	-	1,012	4,390	2,757	151	954	83,306	1	8	6	23	7	31	1	2	5	21	6	23		
17	60,968	-	2,585	-	-	5,635	4,053	2,470	75,711	3	23	1	22	4	45	2	64	1	12	3	76	
18	17,450	-	-	-	-	-	-	-	17,450	1	25	1	45	2	70	0	79	1	28	2	27	
19	81,338	-	3,213	2,213	3,231	12,318	5,880	108,193	4	12	1	27	5	39	4	12	1	27	5	39		
20	20,335	-	1,829	-	-	2,218	3,211	68	27,661	0	61	4	67	5	48	0	33	2	73	3	26	
21	31,718	-	-	-	-	-	1,039	1,243	34,000	3	12	0	8	3	20	3	12	0	8	3	20	
22	8,580	-	190	1,010	803	706	330	11,619	0	5	2	33	2	38	0	5	2	33	2	38		
23	9,220	-	-	-	-	-	578	1,104	10,902	0	62	0	28	1	10	0	62	0	28	1	10	
24	39,367	-	-	-	-	-	1,810	323	41,500	4	1	1	22	5	23	4	1	1	22	5	23	

(f) The company has a reserve fund amounting to 10,550*l.*, of which 1,500*l.* is invested with the Preston Corporation, and the balance is at the company's bankers, as a set off against the amount withdrawn on capital account, in lieu of issuing further shares or debentures.

PART I.—RETURN of Street and Road Tramways, showing Amount of Capital Authorised, Paid up

NAME OF TRAMWAY. AND GAUGE.	Special Acts, or Acts confirming Provisional Orders, relating to the Tramways.	CAPITAL AUTHORISED.			CAPITAL PAID UP.		
		By Shares.	By Loans.	TOTAL.	By Shares.	By Loans (including Debenture Stock).	TOTAL.
* Mechanical Power Authorised (subject in most cases to Board of Trade approval).							
ENGLAND AND WALES - continued.		£.	£.	£.	£.	£.	£.
West Metropolitan * - - - - 4 ft. 8½ ins.	36 & 37 Vict. c. 85 (Southall, Baling, and Shepherd's Bush Order). 39 & 40 Vict. c. 150 (Shep- herd's Bush Order). 44 & 45 Vict. c. 164 (Shep- herd's Bush and Ham- mersmith Order). 45 & 46 Vict. c. 205. 47 & 48 Vict. c. 190. 50 & 51 Vict. c. 196. 52 & 53 Vict. c. 202.	(a) 240,430	53,750	294,180	(a) 170,000	32,500	202,500
Weston-super-Mare, Clevedon, and Portishead.* 4 ft. 8½ ins.	48 & 49 Vict. c. 182 - 53 & 54 Vict. c. 132.	60,000	15,000	75,000	19,361	-	19,361
Wigan * - - - - 3 ft. 6 ins.	42 & 43 Vict. c. 193 - 47 & 48 Vict. c. 80.	49,000	-	49,000	34,334	16,965	51,299
Wirral - - - - 4 ft. 8½ ins.	37 & 38 Vict. c. 183 -	30,000	7,500	37,500	22,740	7,500	30,240
Wisbech and Upwell (Great Eastern Railway Company).* 4 ft. 8½ ins.	44 & 45 Vict. c. 134 - 45 & 46 Vict. c. 166.	(b) 39,628	-	39,628	(b) 39,628	-	39,628
Withington Local Board * - - - 4 ft. 8½ ins.	43 & 44 Vict. c. 172 -	-	25,000	25,000	-	11,625	11,625
Wolverhampton * - - - - 4 ft. 8½ ins.	40 & 41 Vict. c. 124 41 & 42 Vict. c. 231. 43 & 44 Vict. c. 172.	100,000	-	100,000	82,590	-	82,590
Wolverton and Stony Stratford * - 3 ft. 6 ins. (c)	46 & 47 Vict. c. 93 - 50 & 51 Vict. c. 123.	25,000	4,000	29,000	19,903	4,000	23,903
Wolverton and Stony Stratford (Deans- hanger Extension).* 3 ft. 6 ins.	50 & 51 Vict. c. 123 -	-	15,000	15,000	-	15,000	15,000
Woolwich and South East London - 3 ft. 6 ins.	43 & 44 Vict. c. 173 - 44 & 45 Vict. c. 105.	Ordinary, 45,000 Preference, 10,000	20,000	78,000	52,670	19,550	72,220
Worcester - - - - 3 ft.	44 & 45 Vict. c. 164 - 48 & 49 Vict. c. 66. 50 & 51 Vict. c. 123.	No Return received.		-	-	-	-
Wrexham District - - - - 3 ft.	36 & 37 Vict. c. 76 -	10,000	2,500	12,500	8,980	-	8,980
Yarmouth and Gorleston - - - - 3 ft. 6 ins.	34 & 35 Vict. c. 189 (Lowes- toft and Yarmouth Order). 46 & 47 Vict. c. 133.	20,000	-	20,000	20,000	-	20,000
York * - - - - 4 ft.	42 & 43 Vict. c. 193 - 44 & 45 Vict. c. 105.	8,500	6,000	14,500	8,500	6,000	14,500
TOTAL, ENGLAND AND WALES - - -		10,148,229	4,250,483	14,398,692	7,768,791	3,235,550	10,994,341
SCOTLAND :							
Aberdeen District * - - - - 4 ft. 8½ ins.	35 & 36 Vict. c. 194 41 & 42 Vict. c. 234. 51 & 52 Vict. c. 99.	75,000	40,000	115,000	42,910	10,000	52,910
Dundee Street (Commissioners of Police).* 4 ft. 8½ ins.	35 & 36 Vict. c. 191 41 Vict. c. 94. 50 & 51 Vict. c. 72.	Commissioners' Return : - (d) 48,732		48,732	-	(d) 48,732	48,732
Edinburgh Northern * - - - - 4 ft. 8½ ins.	47 & 48 Vict. c. 241 50 & 51 Vict. c. 70.	Lessees' Return : 50,000		50,000	18,871	16,677	35,548
		120,000	30,000	150,000	97,500	24,120	121,620
Edinburgh Street * - - - - 4 ft. 8½ ins.	34 & 35 Vict. c. 89 - 36 & 37 Vict. c. 236. 37 & 38 Vict. c. 68. 38 & 39 Vict. c. 128. 44 & 45 Vict. c. 176. 45 & 46 Vict. c. 91. 46 & 46 Vict. c. 134.	300,000	75,000	375,000	300,000	51,893	351,893
Glasgow and Ibrox * - - - - 4 ft. 7½ ins.	40 & 41 Vict. c. 192 41 & 42 Vict. c. 232.	15,000	3,750	18,750	9,570	-	9,570
Glasgow Corporation - - - - 4 ft. 7½ ins.	33 & 34 Vict. c. 175 34 & 35 Vict. c. 108. 35 & 36 Vict. c. 121. 35 & 36 Vict. c. 198. 38 & 39 Vict. c. 97. 38 & 39 Vict. c. 123. 42 & 43 Vict. c. 122. 47 Vict. c. 25. 48 & 49 Vict. c. 156.	Corporation Return : - 500,000		500,000	-	344,862	344,862
		Lessees' Return : (e) 90,435		90,435	(e) 90,435	-	90,435

(a) This has now been reduced by the sum of 84,258 l. (52 & 53 Vict. c. 202), the ordinary shares of 140,430 l. being reduced to 56,172 l. stock.

(b) Amount expended on the tramway.

(c) Company in liquidation.

and Expended; Length of Tramway Authorised and Open, &c., to 30th June 1890—*continued.*

	CAPITAL EXPENDED.								Length of Tramway Authorised (exclusive of Expired Powers).			Length of Tramway Open for Public Conveyance of Passengers.		
	On Lines and Works Open for Traffic (including Land, Buildings, &c.).	On Lines and Works in course of Construction (including Land, Buildings, &c.).	On Horses.	On Locomotive Engines.	On Cars.	Legal and Parliamentary.	Any other Expenses not included in the foregoing.	TOTAL.	Double Line.	Single Line.	TOTAL.	Double Line.	Single Line.	TOTAL.
	£.	£.	£.	£.	£.	£.	£.	£.	M. CH.	M. CH.	M. CH.	M. CH.	M. CH.	M. CH.
1	171,641	- -	10,715	- -	8,835	6,135	8,449	(a) 206,775	2 65	5 76	8 61	2 63	5 76	8 59
2	- -	22,959	- -	- -	- -	3,962	3,462	30,383	0 15	14 7	14 22	-	-	-
3	47,057	- -	25	7,491	2,408	159	1,983	59,123	0 66	7 72	8 58	0 35	4 47	5 2
4	22,108	- -	2,267	- -	2,604	2,121	1,498	30,598	0 34	2 45	2 79	0 34	2 45	2 79
5	31,367	- -	- -	4,800	2,486	976	- -	39,628	0 34	7 30	7 64	0 34	7 30	7 64
6	9,943	- -	- -	- -	- -	2,009	33	11,985	0 64	2 45	3 29	0 41	0 58	1 19
7	74,362	- -	2,236	- -	4,558	3,397	569	85,122	1 70	6 75	8 65	1 70	6 65	8 55
8	17,460	- -	- -	3,800	2,000	2,220	4,900	30,380	0 41	2 25	2 66	0 41	2 25	2 66
9	15,000	- -	- -	- -	- -	- -	- -	15,000	0 19	1 64	2 3	0 13	1 54	1 67
10	63,021	- -	4,920	- -	2,385	1,612	- -	71,938	1 74	3 3	4 77	1 74	3 3	4 77
11	-	-	-	-	-	-	-	-	0 53	2 49	3 22	0 53	2 49	3 22
12	5,863	- -	- -	- -	254	1,888	802	8,807	0 3	6 27	6 30	0 3	3 22	3 25
13	17,314	- -	1,100	- -	1,900	400	- -	20,414	0 31	2 57	3 8	0 31	2 57	3 8
14	14,500	- -	Lump sum paid for complete undertaking					14,500	0 60	2 28	3 8	0 60	2 28	3 8
15	8,374,066	153,862	660,882	385,166	552,146	557,747	454,158	11,136,027	352 37	625 34	977 71	314 31	438 13	752 44
16	45,332	- -	3,552	- -	2,537	2,425	249	54,195	1 54	7 30	9 4	1 54	7 30	9 4
17	48,732	- -	- -	- -	- -	- -	- -	48,732	} 3 63	1 68	5 51	3 63	1 68	5 51
18	14,164	- -	2,270	5,882	2,113	1,440	630	26,499						
19	135,394	- -	Company cannot supply these details					135,394						
20	291,989	- -	38,704	- -	12,469	27,507	24,399	393,068	13 66	4 29	18 15	13 66	4 29	18 15
21	9,418	- -	421	- -	767	2,201	18	12,825	1 41	0 3	1 44	1 41	0 3	1 44
22	295,703	- -	- -	- -	- -	49,159	- -	344,862	} 29 51	1 43	31 14	29 49	0 48	30 17
23	- -	- -	(f) 64,805	- -	25,630	- -	- -	90,435						

(d) Amount expended by the Commissioners on and incident to the construction of the tramways.

(e) Amount expended by the lessees in respect of the tramways.

(f) Estimate.

PART I.—RETURN of Street and Road Tramways, showing Amount of Capital Authorised, Paid up,

NAME OF TRAMWAY, AND GAUGE.	Special Acts, or Acts confirming Provisional Orders, relating to the Tramways.	CAPITAL AUTHORISED.			CAPITAL PAID UP.		
		By Shares.	By Loans.	TOTAL.	By Shares.	By Loans (including Debenture Stock).	TOTAL.
		* Mechanical Power Authorised (subject in most cases to Board of Trade approval).					
SCOTLAND—continued.		£.	£.	£.	£.	£.	£.
Greenock and Port Glasgow - - 4 ft. 7½ ins.	50 & 51 Vict. c. 177 - -	40,000	10,000	50,000	26,648	-	26,648
Greenock Street (Board of Police) - 4 ft. 8½ in.	34 & 35 Vict. c. 95 - 38 & 39 Vict. c. 113. 40 & 41 Vict. c. 193.	-	50,000	50,000	-	31,705	31,705
Paisley * - - - - - 4 ft. 7½ ins.	48 & 49 Vict. c. 102 -	20,000	6,666	26,666	8,785	1,846	10,431
Rothsay - - - - - 4 ft.	43 & 41 Vict. c. 173 -	30,000	2,350	32,350	16,090	2,350	18,440
Stirling and Bridge of Allan - - 4 ft. 6 ins.	35 & 36 Vict. c. 158 -	20,000	-	20,000	15,470	-	15,470
Vale of Clyde * - - - - - 4 ft. 7½ ins.	34 & 35 Vict. c. 95 - 34 & 35 Vict. c. 108. 38 & 39 Vict. c. 113. 38 & 39 Vict. c. 124. 39 & 40 Vict. c. 65. 51 & 52 Vict. c. 144.	140,290	20,000	160,290	117,005	-	117,005
TOTAL, SCOTLAND - - -		900,725	786,498	1,687,223	743,284	531,985	1,275,269
IRELAND:							
Belfast Street - - - - - 4 ft. 8½ ins.	35 & 36 Vict. c. 193 36 & 37 Vict. c. 233. 38 & 39 Vict. c. 132. 41 & 42 Vict. c. 235. 43 & 44 Vict. c. 75. 47 & 48 Vict. c. 125. 51 & 52 Vict. c. 79.	376,000	94,000	470,000	225,000	50,000	275,000
Blackrock and Kingstown - - - 5 ft. 3 ins.	46 & 47 Vict. c. 104 -	26,000	-	26,000	26,000	-	26,000
Blessington and Poulaphuca * - 5 ft. 3 in.	Order of Lord Lieutenant in Council, 1889.	20,000	-	20,000	-	-	-
Castlederg and Victoria Bridge * - 3 ft.	46 & 47 Vict. c. 105 -	20,000	7,000	27,000	19,080	3,760	22,840
Cavehill and Whitewell * - - - 4 ft. 8 ins.	Order of Lord Lieutenant in Council, 1881.	6,000	2,000	8,000	6,000	2,000	8,000
Dublin and Blessington * - - - 5 ft. 3 ins.	Orders of Lord Lieutenant in Council, 1880, 1882, 1883, and 1887. 46 & 47 Vict. c. 30.	100,000	20,000	120,000	97,059	-	97,059
Dublin and Lucan * - - - - - 3 ft.	Order of Lord Lieutenant in Council, 1880.	30,000	10,000	40,000	29,991	5,000	34,991
Dublin Southern District * - - - 5 ft. 3 ins. and 4 ft.	41 & 42 Vict. c. 159 46 & 47 Vict. c. 232. 50 & 51 Vict. c. 43.	70,000	17,500	87,500	70,000	-	70,000
Dublin United * - - - - - 5 ft. 3 ins.	34 & 35 Vict. c. 88 - 36 & 37 Vict. c. 91. 38 & 39 Vict. c. 209. 39 & 40 Vict. c. 233. 41 & 42 Vict. c. 149. 41 & 42 Vict. c. 158. 43 & 44 Vict. c. 169. 44 & 45 Vict. c. 140. Order of Lord Lieutenant in Council, 1885.	600,000	160,000	760,000	548,710	76,600	625,310
Galway and Salt Hill - - - - - 3 ft.	40 & 41 Vict. c. 237 -	35,000	-	35,000	15,990	-	15,990
Giant's Causeway, Portrush, and Bush Valley.* - - - - - 3 ft.	43 & 44 Vict. c. 197 - 48 & 49 Vict. c. 166.	50,000	25,000	75,000	20,500	12,700	33,200
Lucan, Leixlip and Celbridge * - - 3 ft.	Order of Lord Lieutenant in Council, 1887.	25,000	8,000	33,000	6,400	-	6,400
Portstewart * - - - - - 3 ft.	Order of Lord Lieutenant in Council, 1880.	5,000	1,666	6,666	5,000	1,666	6,666
Sydenham District (Belfast) * - - 3 ft.	Order of Lord Lieutenant in Council, 1885 and 1887.	9,000	3,000	12,000	4,860	-	4,860
Warrenpoint and Rostrevor * - - 3 ft.	Order of Lord Lieutenant in Council, 1875. 39 & 40 Vict. c. 120.	5,500	1,500	7,000	5,500	600	6,100
TOTAL, IRELAND - - -		1,377,500	339,666	1,717,166	1,080,090	152,326	1,232,416
TOTAL, UNITED KINGDOM - - -		12,426,454	5,376,627	17,803,081	9,582,165	3,919,861	13,502,026

and Expended; Length of Tramway Authorised and Open, &c., to 30th June 1890—*continue*!

	CAPITAL EXPENDED.								Length of Tramway Authorised (exclusive of Expired Powers).			Length of Tramway Open for Public Conveyance of Passengers.		
	On Lines and Works Open for Traffic (including Land, Buildings, &c.).	On Lines and Works in course of Construction (including Land, Buildings, &c.).	On Horses.	On Locomotive Engines.	On Cars.	Legal and Parliamentary.	Any other Expenses not included in the foregoing.	TOTAL.	Double Line.	Single Line.	TOTAL.	Double Line.	Single Line.	TOTAL.
	£.	£.	£.	£.	£.	£.	£.	£.	M. CH.	M. CH.	M. CH.	M. CH.	M. CH.	M. CH.
1	31,521	- -	- -	- -	1,516	3,177	3,197	39,411	2 74	0 8	3 2	2 53	0 2	2 55
2	29,156	- -	- -	- -	- -	2,256	- -	31,412	2 18	0 29	2 47	2 18	0 29	2 47
3	15,389	- -	1,457	- -	980	840	582	19,243	0 62	1 54	2 36	0 43	1 37	2 0
4	15,308	- -	755	- -	1,198	2,716	1,898	21,673	0 46	1 64	2 30	0 46	1 64	2 30
5	14,000	- -	500	- -	750	- -	- -	15,250	0 43	2 68	3 31	0 9	3 20	3 29
6	67,241	- -	684	5,867	3,060	53,927	3,155	133,934	4 3	0 8	4 11	3 61	0 30	4 11
7	1,013,347	- -	111,148	11,749	51,018	145,648	34,028	1,366,988	65 11	22 36	87 47	62 65	21 47	84 32
8	237,467	- -	20,700	- -	13,860	- -	- -	272,027	9 11	9 0	18 11	9 11	9 0	18 11
9	17,300	- -	1,280	- -	1,098	2,616	742	23,036	0 63	1 27	2 10	0 63	1 27	2 10
10	- -	- -	- -	- -	- -	- -	- -	- -	- -	4 44	4 44	- -	- -	- -
11	16,347	- -	- -	2,550	3,344	868	- -	23,109	0 6	7 6	7 12	0 6	7 6	7 12
12	7,798	- -	- -	2,098	818	354	555	11,623	0 3	3 27	3 30	0 3	3 27	3 30
13	83,849	- -	- -	5,000	3,365	5,000	- -	97,214	0 50	15 18	15 68	0 50	15 18	15 68
14	27,357	- -	- -	5,086	2,947	- -	- -	35,390	0 17	6 61	6 78	0 17	6 61	6 78
15	66,732	- -	1,802	- -	3,546	1,235	1,207	74,522	1 75	3 66	5 61	1 75	3 66	5 61
16	425,131	- -	31,358	- -	29,495	9,504	125,943	621,431	23 66	9 21	33 7	23 54	9 21	32 75
17	12,880	- -	300	- -	1,110	1,720	- -	15,990	0 10	2 0	2 10	0 10	2 0	2 10
18	23,475	- -	- -	2,850	2,460	3,000	1,247	33,032	0 60	8 0	8 60	0 60	8 0	8 60
19	5,400	- -	- -	- -	- -	1,000	- -	6,400	- -	5 20	5 20	0 27	1 50	1 77
20	5,194	- -	- -	1,568	335	- -	- -	7,097	- -	1 68	1 68	- -	1 68	1 68
21	5,495	- -	- -	- -	- -	315	215	6,025	0 24	1 34	1 58	0 24	0 57	1 1
22	5,699	- -	78	- -	- -	131	- -	5,908	- -	3 24	3 24	- -	3 24	3 24
23	940,104	- -	55,518	19,152	62,378	25,743	129,909	1,232,804	37 65	82 16	120 1	38 0	73 25	111 25
24	10 327,517	153,862	827,584	416,067	665,542	727,138	618,095	13,735,769	455 33	730 6	1,185 39	415 16	533 5	948 21

PART II. - - - - -

RETURN of STREET and ROAD TRAMWAYS, authorised by Parliament, showing the GROSS and the Number of Miles Run by CARS, during the Year ended 30th June 1890,

NAME OF TRAMWAY.	Length of Tramway Open.	GROSS RECEIPTS.					WORKING EXPENDITURE.					
		From Passengers.	From Parcels and Mails.	From Animals, Goods, and Minerals.	From all other Sources.	TOTAL.	Maintenance of Way and Works.	Locomotive Power.	Animal Power.	Repairs and Renewals of Engines.	Renewals, &c., of Horses.	Repairs and Renewals of Cars.
ENGLAND AND WALES:		£.	£.	£.	£.	£.	£.	£.	£.	£.	£.	£.
Accrington Corporation - -	5 31	12,454	81	-	352	12,887	1,880	3,638	-	2,228	-	596
Haslingden Extension - -	4 5											
Alford and Sutton - - -	Tramway closed.	Company in liquidation.					-	-	-	-	-	2
Barrow-in-Furness - - -	4 11	5,481	-	-	80	5,561	165	1,689	-	263	-	36
Barton, Eccles, Winton, and Monton Local Board.	Tramways leased. Traffic included in "Salford Corporation" Return.						-	-	-	-	-	4
Bath - - - - -	1 57	No Return received.					-	-	-	-	-	5
Birkdale and Southport - -	2 49	2,513	-	-	238	2,751	86	-	-	-	29	173
Birkenhead - - - - -	8 6	No Return received.					-	-	-	-	-	7
Birmingham and Aston - -	8 66	Cars, 19,508 Omnibuses, 1,197	-	-	2,891	23,596	1,423	3,300	603	3,469	85	984
Birmingham Corporation (portion).	1 2											
Birmingham and Midland - -	9 0	19,931	-	-	1,043	20,974	1,383	4,678	-	1,946	-	612
Birmingham Corporation (portion).	1 75											
Birmingham Central - - -	8 14	Steam : 73,760	-	-	824	74,584	6,402	20,245	-	7,074	-	1,744
	16 49	Horses : 32,602	-	-	817	33,419	304	-	20,217	-	1,181	1,281
		Cable : 25,048	-	-	164	25,212	148	Cable Haulage. 4,877	-	1,843	-	747
			131,410	-	-	1,805	133,215	6,854	25,122	20,217	8,917	1,181
Birmingham Corporation - -	Tramways leased. Traffic included in "Birmingham and Aston," "Birmingham and Midland," and "Birmingham Central," Returns.											
Blackburn and Over Darwen -	5 15	9,244	246	-	111	9,601	953	-	-	1,267	-	165
Blackburn Corporation - -	8 33	14,800	70	-	554	15,424	483	1,709	3,035	521	188	314
Blackpool Corporation - - -	1 79	6,371	6	-	192	6,569	178	(c) 312	-	99	(d) 314	-
Bolton and Suburban - - -	12 63	20,722	145	-	-	20,867	-	-	9,169	-	1,000	650
Bootle - - - - -	Tramways leased. Traffic included in "Liverpool Corporation" Return.											
Bradford and Shelf - - -	Tramways leased to Bradford and Shelf Tramways Company (Limited). For traffic, see "Bradford Corporation" Return.											
Bradford Corporation - - -	12 27	(f) Bradford Tramways and Omnibus Company's Return : 28,820	82	-	446	29,328	219	11,604	2,438	900	355	392
Bradford and Shelf - - -	2 58	Bradford and Shelf Tramway Company's Return : 10,796					11,426	-	1,803	919	-	-
Brentford and District - - -	Not open for traffic.											
Brighton and Shoreham (formerly Brighton District). (g)	4 42	363	-	-	5	368	5	-	183	-	-	-
Bristol - - - - -	11 2	No Return received.					-	-	-	-	-	-
Burnley and District - - -	7 12	12,321	280	-	256	12,867	1,370	1,798	-	1,372	-	315
Bury, Rochdale, and Oldham -	30 22	33,698	240	131	1,402	35,471	2,178	14,901	-	5,006	-	945
Oldham Borough (portion) -	3 33											
Cambridge Street - - - -	2 54	3,568	-	28	158	3,754	523	-	-	-	263	183
Cardiff - - - - -	7 14	42,022	-	-	519	42,541	769	-	15,626	-	1,860	2,340
Cardiff District and Penarth Harbour.	2 33											
Cardiff District and Penarth Harbour.	Tramways worked by the Provincial Tramways Company, Limited. Traffic included in "Cardiff" Return.											
Chesham, Boxmoor, and Hemel Hempstead.	Not open for traffic.											
Chester - - - - -	2 30	6,010	-	-	330	6,340	117	-	1,705	-	347	484
Chesterfield - - - - -	1 18	No Return received.					-	-	-	-	-	-
Coventry and District - - -	5 60	3,211	78	-	154	3,441	146	1,427	-	526	-	142
Croydon (formerly Croydon and Norwood).	6 63	9,108	-	-	261	9,369	358	-	2,495	-	304	289

(a) Estimated.

(b) Including depreciation, 2,306*l.*; Debenture Interest, 1,963*l.*; Rent of Corporation tramways, 1,211*l.*; Surplus, 3,210*l.*

(c) For driving dynamos.

(d) Renewal of electrical apparatus.

(e) Two fixed engines and 10 motors.

(f) The figures given are generally estimated.

(g) The figures are for the months of May and June only, during which the present company worked the tramways.

PART II.

RECEIPTS, WORKING EXPENDITURE, and NET RECEIPTS; the Number of PASSENGERS Conveyed, together with the Number of HORSES, ENGINES, and CARS at that Date.

WORKING EXPENDITURE.									NET RECEIPTS.	Number of Passengers Conveyed (including Season or Composition Ticket-holders).	Number of Miles Run by Cars.	Working Stock.		
Traffic Expenses.	Direction and Management.	Rent of Offices, Stables, and Sheds.	Rates, Taxes, and Tolls.	Compensation for Personal Injury.	Legal and Parliamentary.	Any other Working Expenses not included in the foregoing.	TOTAL.					Number of Horses.	Number of Locomotive Engines.	Number of Cars.
£.	£.	£.	£.	£.	£.	£.	£.	£.						
1	1,433	490	1,235	289	10	88	-	11,887	1,000	(a) 1,772,634	251,451	-	14	14
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	708	313	-	341	-	189	181	3,835	1,726	1,096,200	153,318	-	7	8
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	1,329	105	50	12	-	60	24	1,868	883	(a) 503,000	(a) 57,742	80	-	12
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	2,151	877	121	626	107	141	347	14,234	9,362	Cars, 3,828,160 Omnibuses, 166,287	Cars, 332,976 Omnibuses, 29,607	21	27	28
9	1,490	550	804	Included in previous Column.	179	90	552	12,284	(b) 8,690	4,783,394	312,105	-	24	22
10	7,694	4,543	1,651	3,651	919	714	255	-	-	13,797,864	1,169,883	-	70	64
11	3,944			893	75	56	112	-	-	4,123,127	796,591	432	-	50
12	2,349			1,023	169	125	82	-	-	4,261,050	459,806	-	-	20
13	13,987	4,543	1,651	5,667	1,163	895	449	94,318	38,897	22,181,041	2,426,280	432	70	134
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	2,420	573	95	199	616	56	286	6,630	2,071	1,197,292	158,077	-	10	15
16	4,062	565	323	302	320	30	700	12,552	2,872	2,423,020	369,913	85	14	27
17	1,183	435	50	241	224	27	73	3,186	3,433	888,599	95,368	-	(e)	10
18	3,362	240	700	360	100	-	-	15,571	5,296	2,524,527	431,430	320	-	36
19	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	1,000	730	31	750	2,000	11	530	20,960	8,368	4,692,480	562,560	60	25	35
22	3,045	Included in previous Column.	-	520	-	-	303	6,590	4,836	2,590,040	170,819	-	11	11
23	-		-	-	-	-	-	-	-	-	-	-	-	-
24	74		-	3	-	-	-	265	103	(a) 43,611	(a) 6,700	29	-	4
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	3,346	528	70	303	466	14	-	9,582	3,275	1,507,831	196,109	-	14	13
27	4,843	1,208	876	773	-	14	674	30,918	4,553	4,992,300	858,541	-	85	81
28	1,315	221	17	91	-	-	108	2,721	1,033	578,014	89,780	21	-	6
29	12,349	200	2,072	-	139	-	-	35,355	7,186	9,583,917	970,017	439	-	(h) 47
30	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	1,205	362	-	234	9	3	157	4,623	1,717	563,728	207,563	71	-	(i) 11
33	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	380	492	33	38	10	17	220	3,401	40	343,322	87,760	-	7	6
35	3,472	261	-	148	49	-	-	7,876	1,693	1,403,714	246,719	95	-	14

(a) Also 85 omnibuses.

(i) Also 14 other vehicles.

PART II.—RETURN of Street and Road Tramways, showing the Gross Receipts,

NAME OF TRAMWAY.	Length of Tramway Open.	GROSS RECEIPTS.					WORKING EXPENDITURE.							
		From Passengers.	From Parcels and Mails.	From Animals, Goods, and Minerals.	From all other Sources.	TOTAL.	Maintenance of Way and Works.	Locomotive Power.	Animal Power.	Repairs and Renewals of Engines.	Renewals, &c., of Horses.	Repairs and Renewals of Cars.		
ENGLAND AND WALES—continued.														
	M. CH.	£.	£.	£.	£.	£.	£.	£.	£.	£.	£.	£.		
Derby - - - - -	4 64	10,285	-	-	453	10,738	-	-	4,069	-	1,000	563	1	
Dewsbury, Batley, and Birstal -	4 23	6,021	-	-	89	6,110	682	1,177	80	561	-	300	2	
Drypool and Marfleet - - -	1 27	2,983	-	-	-	2,983	112	1,411	-	280	-	24	3	
Dudley and Kingswinford - -	Not open for traffic.		-	-	-	-	-	-	-	-	-	-	4	
Dudley and Stourbridge - - -	5 12	9,007	-	-	364	9,371	408	2,007	-	1,014	-	228	5	
Dudley, Sedgley, and Wolverhampton.	5 62	No Return received.		-	-	-	-	-	-	-	-	-	6	
Exeter - - - - -	2 30	No Return received.		-	-	-	-	-	-	-	-	-	7	
Flamborough Head - - -	No Return received.		-	-	-	-	-	-	-	-	-	-	8	
Folkestone, Sandgate, and Hythe	Not open for traffic.		-	-	-	-	-	-	-	-	-	-	9	
Gateshead and District - - -	8 40	9,544	62	-	219	9,825	700	-	-	1,100	-	{ Included under Engines. }	10	
Gloucester - - - - -	2 76	2,739	-	-	128	2,867	71	-	877	-	172	56	11	
Gosport, Alverstoke, and Bury Cross.	Not open for traffic.		-	-	-	-	-	-	-	-	-	-	12	
Gravesend, Rosherville, and Northfleet.	2 20	1,707	2	-	202	1,911	53	-	862	-	-	27	13	
Great Grimsby - - - - -	4 67	5,955	-	-	100	6,055	89	-	1,755	-	268	196	14	
Harrow Road and Paddington -	1 61	9,241	-	-	285	9,526	20	-	3,159	-	204	102	15	
Hartlepool - - - - -	2 41	1,583	-	-	12	1,595	70	205	-	213	-	67	16	
Highgate Hill - - - - -	0 57	No Return received.		-	-	-	-	-	-	-	-	-	17	
Huddersfield Corporation (f) -	11 19	15,594	63	-	147	15,804	1,746	4,201	-	1,803	-	840	18	
Hull Street (A) - - - - -	10 65	13,390	89	-	170	13,649	2,205	-	3,972	-	81	759	19	
Ipswich - - - - -	4 21	2,092	-	-	49	2,141	32	-	735	-	233	104	20	
Keighley - - - - -	2 28	1,727	-	-	106	1,833	-	-	823	-	56	41	21	
Lancaster and District - - -	Not open for traffic.		-	-	-	-	-	-	-	-	-	-	22	
Lea Bridge, Leyton, and Walthamstow.	2 32	No Return received.		-	-	-	-	-	-	-	-	-	23	
Leamington and Warwick - -	3 0	5,072	157	-	338	5,567	640	-	2,408	-	250	274	24	
Leeds - - - - -	14 33	46,800	362	-	1,270	48,432	2,840	8,138	9,723	{ Included in Col. 2. }	1,375	3,637	25	
Leeds Corporation - - - - -	Not open for traffic.		-	-	-	-	-	-	-	-	-	-	26	
Leicester - - - - -	8 74	30,593	-	-	1,022	31,615	2,170	-	11,823	-	1,000	2,217	27	
Lincoln - - - - -	1 64	1,898	-	-	114	2,012	29	-	438	-	53	75	28	
Lincolnshire - - - - -	Not open for traffic.		-	-	-	-	-	-	-	-	-	-	29	
Liverpool Corporation - - -	28 27	Cars, 203,700 Omnibuses, 64,480	}	3,730	4,002	275,912	1,253	100,077	-	13,286	15,076	30		
Bootle Corporation - - -	3 20													
Walton Local Board - - -	3 20													
Wavertree Local Board - -	1 10													
West Derby Local Board - -	5 23													
Llanelli (L) - - - - -	0 75	982	-	-	-	982	Worked in connection with another business, and cannot be stated.							31
London - - - - -	21 58	296,739	-	-	3,481	300,220	22,142	-	89,418	-	13,550	7,687	32	
London, Camberwell, and Dulwich.	Not open for traffic.		-	-	-	-	-	-	-	-	-	-	33	
London Southern (n) - - -	5 60	14,392	-	-	354	14,746	516	-	5,512	-	640	499	34	
London Street - - - - -	13 40	125,237	-	-	1,205	126,442	6,708	-	40,126	-	4,984	3,401	35	
Manchester Carriage and Tramways Company.	25 9	255,018	2,289	-	5,032	262,339	3,249	-	73,494	-	17,435	9,812	36	
Manchester Corporation (part)	26 37													
Moss Side Local Board -	1 50													
Newton Heath Local Board	1 67													
Oldham Borough (part) -	4 76													
Withington Local Board -	1 19													
Manchester Corporation - - -	Tramways leased. Traffic included chiefly in "Manchester Carriage and Tramways Company's" Return, but partly in "Salford													37
Manchester, Middleton, and District.	Not open for traffic.		-	-	-	-	-	-	-	-	-	-	38	

(a) Also seven omnibuses and one brake.

(b) Insurance premium.

(c) Estimate.

(d) Compensation to the amount of 89 l. was also paid by the assurance company.

(e) An electric system is in use in one half mile of tramway.

(f) This is the only instance in which a tramway is worked as well as owned by the local authority.

(g) Insurance premium against accidents.

(h) Company in liquidation.

(i) This amount includes rent to the corporation, 40,112 l., and interest, 2,180 l.

(k) Also 87 omnibuses.

(l) This Return being imperfect the figures are not included in the general totals.

(m) Also 51 omnibuses.

Working Expenditure, and Net Receipts, &c., to 30th June 1890—continued.

WORKING EXPENDITURE.									NET RECEIPTS.	Number of Passengers Conveyed (including Season or Composition Ticket-holders).	Number of Miles Run by Cars.	Working Stock.		
Traffic Expenses.	Direction and Management.	Rent of Offices, Stables, and Sheds.	Rates, Taxes, and Tolls.	Compensation for Personal Injury.	Legal and Parliamentary.	Any other Working Expenses not included in the foregoing.	TOTAL.					Number of Horses.	Number of Locomotive Engines.	Number of Cars.
£.	£.	£.	£.	£.	£.	£.	£.	£.						
1	3,045	496	185	283	-	-	55	9,647	1,091	2,464,625	260,382	98	-	(a) 18
2	800	200	60	824	-	-	-	4,134	1,976	1,322,000	145,200	1	9	13
3	484	182	77	89	(b) 79	20	75	2,833	50	(c) 922,560	(c) 165,961	-	7	8
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	958	260	-	346	(d) 737	216	302	6,455	2,916	2,161,734	121,767	-	9	8
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	2,500	470	375	-	1,000	-	1,800	7,945	1,880	1,831,598	187,104	-	15	18
11	1,122	110	73	Included in previous Column.		-	42	2,523	344	656,437	136,614	32	-	10
12	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	429	-	110	78	-	20	24	1,593	318	302,621	48,281	10	(e) -	6
14	1,139	200	349	-	-	-	-	3,996	2,059	1,008,697	220,140	55	-	13
15	3,600	456	170	141	-	-	-	7,852	1,674	1,684,740	216,675	122	-	15
16	806	123	-	64	-	-	-	1,548	47	319,465	35,971	-	5	6
17	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	1,487	528	154	277	(g) 180	-	248	11,564	4,240	2,493,280	213,546	-	18	19
19	4,770	187	24	581	27	2	-	12,608	1,041	3,119,075	426,269	166	-	31
20	806	56	30	48	-	-	73	2,117	24	240,406	(c) 85,000	20	-	8
21	660	-	13	80	-	-	78	1,761	82	(e) 414,670	(c) 53,044	37	-	7
22	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	399	150	71	115	-	2	313	4,622	945	753,031	105,576	52	-	12
25	6,345	850	608	879	-	131	965	35,491	12,941	(c) 7,654,666	857,642	298	23	68
26	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	7,855	1,054	145	391	18	-	-	26,673	4,942	7,095,046	792,590	299	-	43
28	669	78	-	111	-	3	16	1,372	640	318,680	47,028	14	-	6
29	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	48,707	8,085	2,233	6,285	697	902	1,617	193,218	(h) 82,694	Cars, 25,249,441 Omnibuses, 8,644,989	Cars, 3,869,303 Omnibuses, 1,672,008	3,199		(k) 170
31	-	-	-	-	-	-	-	-	-	235,881	40,489	10	-	5
32	69,703	5,717	4,951	4,183	1,593	1,298	3,510	223,702	76,518	60,534,994	6,816,081	3,211	-	(m) 287
33	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	4,503	857	457	-	133	-	-	12,617	2,129	2,420,720	454,151	170	-	20
35	38,869	1,500	4,794	-	1,199	-	-	101,081	25,361	23,976,706	2,449,436	1,127	-	124
36	66,429	5,319	2,424	4,502	1,655	537	3,965	188,821	73,518	(c) 30,802,160	6,181,440	2,796	-	303
37	Corporation "Return."													
38	-	-	-	-	-	-	-	-	-	-	-	-	-	-

(n) This company's accounts are not made up to 30th June; they are made up for the year, 1st January to 31st December, and these figures are therefore for the year 1889.

PART II.—RETURN of Street and Road Tramways, showing the Gross Receipts,

NAME OF TRAMWAY.	Length of Tramway Open.	GROSS RECEIPTS.					WORKING EXPENDITURE. - - - -							
		From Passengers.	From Parcels and Mails.	From Animals, Goods, and Minerals.	From all other Sources.	TOTAL.	Main- tenance of Way and Works.	Locomo- tive Power.	Animal Power.	Repairs and Renewals of Engines.	Renewals, &c., of Horses.	Repairs and Renewals of Cars.		
ENGLAND AND WALES—continued.														
	M. CH.	£. Cars, 3,153 Steamers, 2,260	£.	£.	£.	£.	£.	£.	£.	£.	£.	£.		
Middlesbrough and Stockton -	2 61	}	-	-	180	5,543	360	(a) 1,816	1,341	-	-	95	136	
Morecambe - - - -	2 23		2,613	-	-	35	2,648	20	-	860	-	-	55	2
Moss Side Local Board - -	Tramways leased. Traffic included in "Manchester Carriage and Tramways Company's" Return.												3	
Neath and District - - -	4 6	No Return received.		-	-	-	-	-	-	-	-	-	4	
Newcastle-upon-Tyne Corpora- tion.	11 36	29,554	99	-	821	30,474	590	-	11,550	-	1,174	1,537	5	
Newport and Parkhurst - -	Not open for traffic.		-	-	-	-	-	-	-	-	-	-	6	
Newport (Mon.) - - - -	1 13	4,293	-	-	205	4,498	226	-	869	-	123	307	7	
Newport Pagnell and District -	No Return received.		-	-	-	-	-	-	-	-	-	-	8	
Newton Heath Local Board -	Tramways leased. Traffic included in "Manchester Carriage and Tramways Company's" Return.												9	
Northampton Street - - -	4 20	5,787	-	66	325	6,178	81	-	1,506	-	253	196	10	
North London - - - -	9 73	16,187	-	-	1,063	17,250	1,079	5,176	114	1,309	-	49	11	
North Metropolitan - - -	41 58	391,035	-	-	14,267	405,292	35,479	(c) 1,380	110,997	-	19,505	10,578	12	
North Shields and Tynemouth District.	2 46	Line only re-opened on 12th June 1890 -					-	-	-	-	-	-	13	
North Staffordshire - - -	7 0	17,366	172	-	399	17,927	677	1,777	39	492	-	168	14	
Nottingham and District - -	10 40	23,934	-	-	574	24,508	610	-	14,151	-	963	825	15	
Oldham, Ashton-under-Lyne, and Hyde District	Not open for traffic.		-	-	-	-	-	-	-	-	-	-	16	
Oldham Borough (Corporation) -	Tramways leased. Traffic included partly in "Bury, Rochdale, and Oldham" Return, and partly in "Manchester Carriage and												17	
Oxford (City of) and District -	4 2	9,102	-	-	247	9,349	921	-	2,256	-	205	-	18	
Plymouth - - - -	Not open for traffic.		-	-	-	-	-	-	-	-	-	-	19	
Plymouth, Stonehouse, and Devonport.	1 74	13,961	-	-	254	14,215	316	-	4,985	-	373	712	20	
Pontypridd and Rhondda Valley	No Return received. Company in liquidation.					-	-	-	-	-	-	-	21	
Portsmouth (Borough of), Kings- ton, Fratton, and Southsea.	Tramways worked in conjunction with the Portsmouth Street Tramways.												22	
Portsmouth Street - - -	11 77	}	40,485	-	-	2,614	43,099	1,846	16,342	-	1,167	2,949	23	
Borough of Portsmouth, &c.	3 30													
Preston Corporation and Fulwood Local Board.	7 61	10,345	-	-	176	10,521	-	-	5,072	-	-	366	24	
Reading - - - -	2 30	4,868	-	-	152	5,020	426	-	1,781	-	199	323	25	
Rossendale Valley - - -	4 76	6,076	-	-	1	6,077	-	816	-	265	-	30	26	
St. Helens and District (e) - -	6 0	3,024	21	-	-	3,045	260	400	390	20	-	16	27	
Salford Corporation - - -	13 26	}	67,734	645	-	635	69,014	-	-	20,686	-	4,907	2,655	28
Manchester Corporation (por- tion).	1 69													
Barton, &c. Local Board -	2 10													
Sheffield Corporation - - -	9 34	38,364	-	-	838	39,202	4,774	-	14,346	-	1,825	1,160	29	
Shipley - - - -	2 25	1,391	-	-	-	1,391	110	-	-	-	-	-	30	
Southampton Street - - -	5 8	13,234	-	-	498	13,732	645	-	3,763	-	810	847	31	

(a) Cost of working ferry steamers.

(b) Estimate.

(c) Electrical power.

(d) Cars and omnibuses.

(e) This Return is for the period from 6th February 1890 to 30th June 1890. The steam working on the whole line began on 24th May.

Working Expenditure, and Net Receipts, &c., to 30th June 1890—*continued.*

WORKING EXPENDITURE.									NET RECEIPTS.	Number of Passengers Conveyed (including Season or Competition Ticket- holders).	Number of Miles Run by Cars.	Working Stock.			
Traffic Expenses.	Direction and Manage- ment.	Rent of Offices, Stables, and Sheds.	Rates, Taxes, and Tolls.	Compensation for Personal Injury.	Legal and Parlia- mentary.	Any other Working Expenses not included in the foregoing.	TOTAL.	Number of Horses.				Number of Locomo- tive Engines.	Number of Cars.		
£.	£.	£.	£.	£.	£.	£.	£.	£.							
1	402	446	20	157	-	-	-	81	4,804	739	Cars, 753,399 Ferry steamers, 342,912	Cars, 114,163 Ferry steamers, 83,820	27	2	12
2	430	125	25	80	-	-	10	171	1,776	872	(b) 627,072	(A) 32,300	81	-	7
3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
5	4,020	888	246	1,063	112	25	3,992	25,197	5,277	3,717,136	606,046	278	-	-	80
6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
7	1,083	180	80	83	-	-	-	106	2,057	1,441	1,030,320	115,000	40	-	8
8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10	1,177	504	-	54	-	-	-	173	4,046	2,132	1,248,748	131,464	58	-	14
11	6,383	636	76	623	874	226	64	16,609	641	1,777,709	246,227	3	25	27	
12	84,860	9,392	3,285	10,805	7,166	{ Included in previous Column. }		1,185	294,432	110,860	69,715,528	7,196,900	3,846	-	342
13	-	-	-	-	-	-	-	-	-	-	-	-	-	5	6
14	5,418	1,015	26	257	320	50	-	10,239	7,688	2,999,586	281,934	1	22	22	
15	3,357	884	-	561	28	116	-	21,495	3,013	3,766,007	635,774	270	1	34	
16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
17	Tramways Company's "Return.			—	—	—	—	—	—	—	—	—	—	—	—
18	2,078	450	60	107	-	-	53	601	6,731	2,618	1,930,415	230,089	83	-	14
19	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
20	2,357	200	1,406	-	8	-	-	10,357	3,868	2,237,901	207,862	121	-	-	24
21	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
22	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
23	12,636	200	1,926	-	46	-	-	37,112	5,987	6,608,817	1,269,337	400	-	-	(d) 75
24	1,949	200	65	149	-	-	-	55	7,866	2,665	(b) 1,936,392	258,432	110	-	31
25	390	433	25	133	-	-	-	24	3,734	1,286	788,437	121,348	40	-	15
26	1,655	529	73	133	404	-	-	49	3,954	2,123	984,708	137,398	-	9	10
27	270	211	24	103	20	-	-	605	2,123	922	862,924	{ Horse cars, 21,000 Steam cars, 34,559 }	74	7	7
28	19,002	2,293	682	1,267	352	114	1,116	53,074	15,940	(b) 8,128,080	1,079,390		787	-	-
29	3,520	1,000	862	1,495	-	-	13	304	28,789	10,413	6,185,676	691,810	318	-	(f) 46
30	1,247	193	100	95	-	-	207	56	2,008	Loss, 617	331,372	61,571	26	-	5
31	5,349	475	360	-	6	-	-	-	11,955	1,777	1,678,021	297,220	140	-	26

(f) Also four omnibuses.

PART II.—RETURN of Street and Road Tramways, showing the Gross Receipts,

NAME OF TRAMWAY.	Length of Tramway Open.	GROSS RECEIPTS.					WORKING EXPENDITURE.						
		From Passengers.	From Parcels and Mails.	From Animals, Goods, and Minerals.	From all other Sources.	TOTAL.	Maintenance of Way and Works.	Locomotive Power.	Animal Power.	Repairs and Renewals of Engines.	Renewals, &c., of Horses.	Repairs and Renewals of Cars.	
ENGLAND AND WALES—continued.													
	M. CH.	£.	£.	£.	£.	£.	£.	£.	£.	£.	£.	£.	
South Eastern Metropolitan	No Return received.	—	—	—	—	—	—	—	—	—	—	1	
South Gosforth	0 59	9,652	12	—	72	9,736	109	—	4,000	—	235	220	
South London	12 72	73,227	—	—	836	74,063	4,194	—	—	—	3,764	4,773	
Southport	6 42	9,415	109	—	566	10,090	588	—	2,361	—	288	247	
South Shields Corporation	2 43	4,309	47	—	776	5,532	—	—	2,318	—	299	413	
South Staffordshire (formerly South Staffordshire and Birmingham District).	28 51	20,794	111	992	396	22,293	1,656	4,971	603	3,293	—	864	
Southwark and Deptford	4 72	23,961	—	—	613	24,474	1,013	—	5,410	—	1,718	658	
Stockport and Hazel Grove (d)	2 76	1,032	2	—	13	1,047	—	—	228	—	19	7	
Stockton-on-Tees and District	6 23	5,029	—	—	223	5,252	109	360	801	270	137	54	
Sunderland (Company's)	3 76	14,450	—	—	734	15,184	1,282	—	4,476	—	584	1,156	
Sunderland (Corporation)	2 27	Tramways leased. Traffic included in "Sunderland (Company)" Return.					—	—	—	—	—	11	
Swansea (A)	5 39	20,974	326	398	429	22,027	1,194	1,074	4,975	657	548	732	
Wallasey	3 26	4,640	—	—	304	4,944	168	—	1,282	—	361	240	
Walton-on-the-Hill Local Board	Tramways leased. Traffic included in "Liverpool Corporation" Return.					—	—	—	—	—	—	14	
Wantage	2 38	720	84	690	93	1,787	58	—	—	200	—	18	
Wavertree Local Board	Tramways leased. Traffic included in "Liverpool Corporation" Return.					—	—	—	—	—	—	16	
West Derby Local Board	Tramways leased. Traffic included in "Liverpool Corporation" Return.					—	—	—	—	—	—	17	
West Metropolitan	8 59	25,758	—	—	1,159	26,917	3,343	—	6,429	—	781	786	
Weston-super-Mare, Clevedon, and Portishead.	Not open for traffic.					—	—	—	—	—	—	19	
Wigan	5 2	7,516	—	—	312	7,828	608	2,354	16	876	—	233	
Wirral	2 79	5,536	—	—	244	5,780	337	—	1,294	—	381	179	
Wisbech and Upwell (Great Eastern Railway Company).	7 64	1,016	33	1,252	—	2,301	314	685	—	242	—	1,048	
Withington Local Board	Tramways leased. Traffic included in "Manchester Carriage and Tramway Company's" Return.					—	—	—	—	—	—	23	
Wolverhampton	8 55	10,128	200	—	180	10,508	526	—	3,258	—	465	332	
Wolverton and Stony Stratford	2 66	1,662	145	185	50	2,042	362	725	160	322	—	138	
Wolverton and Stony Stratford (Deanshanger Extension).	1 67	Tramways leased. Traffic included in "Wolverton and Stony Stratford" Return.					—	—	—	—	—	26	
Woolwich and South East London.	4 77	14,638	—	—	330	14,968	485	—	3,847	—	702	445	
Worcester	3 52	No Return received.					—	—	—	—	—	—	28
Wrexham District	3 25	853	3	—	—	856	72	—	249	—	20	40	
Yarmouth and Gorleston	3 8	5,072	—	—	218	5,290	376	—	1,804	—	100	82	
York	3 8	3,449	—	—	161	3,600	95	—	1,986	—	—	70	
TOTAL, ENGLAND AND WALES	752 44	2,498,332	6,264	7,672	61,367	2,573,535	130,119	110,654	660,387	40,350	102,114	93,609	

(a) Also 13 omnibuses.

(b) Also three omnibuses.
(c) Estimate.(c) Includes 40 horses hired under contract.
(f) Also two omnibuses.

(d) From 31st March 1890 to 30th June 1890.

Working Expenditure, and Net Receipts, &c., to 30th June 1890—continued.

WORKING EXPENDITURE.									NET RECEIPTS.	Number of Passengers Conveyed (including Season or Composition Ticket- holders).	Number of Miles Run by Cars.	Working Stock.		
Traffic Expenses.	Direction and Manage- ment.	Rent of Offices, Stables, and Sheds.	Rates, Taxes, and Tolls.	Compensation for Personal Injury.	Legal and Parliamentary.	Any other Working Expenses not included in the foregoing.	TOTAL.	Number of Horses.				Number of Locomotive Engines.	Number of Cars.	
£.	£.	£.	£.	£.	£.	£.	£.	£.						
1	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2	1,570	350	250	60	70	200	172	7,236	2,500	1,061,270	196,000	100	- -	11
3	19,937	1,655	954	657	913	205	26,995	63,647	10,416	16,154,461	1,767,314	785	- -	(a) 86
4	1,413	476	59	224	- -	- -	194	5,845	4,245	1,145,117	179,347	67	- -	23
5	802	323	16	100	503	-	226	5,000	632	1,242,325	184,529	59	- -	(b) 8
6	5,620	1,460	114	550	- -	97	722	19,950	2,343	3,276,284	395,758	20	86	34
7	8,340	889	201	258	337	161	260	19,745	4,729	5,602,415	530,434	(c) 217	- -	32
8	224	- -	24	- -	- -	- -	61	563	484	(e) 123,767	(e) 14,996	44	- -	(f) 6
9	2,375	144	67	121	113	3	- -	4,554	698	1,037,156	151,543	29	8	15
10	1,269	730	25	229	2	- -	132	9,885	(g) 5,299	2,607,986	274,687	110	- -	33
11	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12	2,557	1,035	353	1,075	19	323	279	14,821	7,206	2,511,513	360,416	119	3	55
13	1,284	300	- -	121	- -	29	336	4,101	843	(e) 609,544	(e) 145,784	46	- -	5
14	—	—	—	—	—	—	—	—	—	—	—	—	—	—
15	860	25	- -	20	- -	- -	- -	1,181	606	30,463	(e) 10,955	- -	3	3
16	—	—	—	—	—	—	—	—	—	—	—	—	—	—
17	—	—	—	—	—	—	—	—	—	—	—	—	—	—
18	8,440	724	300	509	284	44	- -	21,640	5,277	4,456,660	659,107	246	- -	48
19	—	—	—	—	—	—	—	—	—	—	—	—	—	—
20	553	310	- -	369	435	300	139	6,193	1,685	(e) 1,245,896	(e) 139,360	1	12	12
21	1,488	457	- -	203	- -	43	252	4,634	1,146	(e) 765,752	(e) 169,508	47	- -	7
22	450	Included in direction and manage- ment of railway.	- -	77	- -	- -	8	2,824	Loss, 523	102,422	27,418	- -	3	9
23	—		—	—	—	—	—	—	—	—	—	—	—	—
24	924	600	195	399	33	13	180	6,925	3,583	1,327,825	204,597	86	- -	20
25	469	230	31	53	- -	- -	363	2,346	Loss, 804	229,602	41,865	2	4	6
26	—	—	—	—	—	—	—	—	—	—	—	—	—	—
27	5,050	844	95	161	160	- -	111	11,920	3,048	2,481,196	321,435	156	- -	15
28	—	—	—	—	—	—	—	—	—	—	—	—	—	—
29	205	32	10	6	- -	- -	- -	634	222	60,423	17,800	9	- -	3
30	951	268	54	146	- -	9	233	4,023	1,267	859,927	114,210	50	- -	9
31	1,129	136	96	- -	- -	- -	48	2,660	940	814,620	121,007	37	- -	10
32	552,793	65,107	36,616	51,901	24,905	6,957	56,932	1,932,444	641,091	418,399,936	53,367,578	21,681	534	3,030

(g) Includes 960 £. rent paid to Corporation for lease of their lines.

(h) Including receipts and expenditure of the Swansea and Mumbles Railway.

PART II.—RETURN of Street and Road Tramways, showing the Gross Receipts,

NAME OF TRAMWAY.	Length of Tramway Open.	GROSS RECEIPTS.					WORKING EXPENDITURE.					
		From Passengers.	From Parcels and Mails.	From Animals, Goods, and Minerals.	From all other Sources.	TOTAL.	Maintenance of Way and Works.	Locomotive Power.	Animal Power.	Repairs and Renewals of Engines.	Renewals, &c., of Horses.	Repairs and Renewals of Cars.
SCOTLAND:	M. CH.	£.	£.	£.	£.	£.	£.	£.	£.	£.	£.	£.
Aberdeen District - - -	9 4	15,686	-	-	690	16,376	623	-	5,730	-	-	722
Dundee Street (Commissioners of Police).	5 51	15,014	57	-	898	15,969	1,042	2,376	-	1,275	422	628
Edinburgh Northern - - -	2 49	9,670	-	-	127	9,797	1,637	959 (Cable.)	664	{ Included in first Column. }	{ - }	{ Included in first Column. }
Edinburgh Street - - -	18 15	98,283	173	-	5,014	103,470	(a) 6,371	-	31,820			
Glasgow and Ibrox - - -	1 44	1,161	-	-	-	1,161	92	-	361	-	56	106
Glasgow Corporation (b) - -	30' 17	227,684	5,694	-	7,808	241,186	1,582	-	91,507	-	19,140	5,718
Greenock and Port Glasgow -	2 55	3,705	-	-	28	3,733	-	-	-	-	-	24
Greenock Street (Board of Police)	Tramways leased. Traffic included in "Vale of Clyde" Return.						-	-	-	-	-	-
Paisley - - - - -	2 0	2,697	-	-	214	2,911	-	-	946	-	99	80
Rothsay - - - - -	2 30	3,190	6	-	109	3,305	121	-	643	-	97	87
Stirling and Bridge of Allan -	3 29	2,518	122	-	84	2,724	205	-	1,123	-	-	138
Vale of Clyde - - - - -	4 11	15,772	23	396	527	16,718	613	2,503	1,899	2,113	256	{ Included with engines. }
Greenock Street - - -	2 47											
TOTAL, SCOTLAND - - -	84 32	395,380	6,075	396	15,499	417,360	12,286	5,838	134,693	3,368	24,431	11,335
IRELAND:												
Belfast Street - - - - -	18 11	70,243	-	-	1,699	71,942	1,717	-	22,404	-	1,803	2,532
Sydenham District - - -	1 1											
Blackrock and Kingstown -	2 10	1,881	2	-	160	2,043	2	-	674	-	126	41
Blessington and Poulaphuca -	Not open for traffic.		-	-	-	-	-	-	-	-	-	-
Castlederg and Victoria Bridge -	7 12	817	61	1,090	28	1,996	198	843	-	70	-	15
Cavehill and Whitewell - -	3 30	2,332	-	-	-	2,332	233	649	-	(f) 790	-	-
Dublin and Blessington - -	15 68	3,789	321	565	86	4,761	623	1,831	-	219	-	15
Dublin and Lucan - - -	6 78	3,923	68	581	264	4,836	418	956	-	570	-	185
Lucan, Leixlip, and Celbridge	1 77											
Dublin Southern District - -	5 61	6,801	-	-	539	7,340	674	-	3,110	-	446	796
Dublin United - - - - -	32 75	117,710	1,563	-	3,909	123,182	19,791	-	32,321	-	5,129	5,238
Galway and Salt Hill - - -	2 10	1,317	-	-	136	1,453	47	-	365	-	-	81
Giant's Causeway, Portrush, and Bush Valley.	8 60	2,071	18	40	11	2,140	183	792	-	305	-	60
Lucan, Leixlip, and Celbridge -	Worked by Dublin and Lucan Steam Tramway Company, and traffic included in that Company's Return.										-	-
Portstewart - - - - -	1 68	633	51	-	-	684	3	354	-	-	-	27
Sydenham District (Belfast) -	Tramway worked by Belfast Street Tramways Company, and traffic included in that Company's Return.										-	-
Warrenpoint and Rostrevor -	3 24	1,025	52	-	72	1,149	36	-	272	-	36	30
TOTAL, IRELAND - - -	111 25	212,542	2,186	2,276	6,904	223,868	23,925	4,925	59,146	1,954	7,540	9,015
TOTAL, UNITED KINGDOM - - -	948 21	3,106,254	14,475	10,244	83,770	3,214,743	166,330	121,417	854,226	45,692	134,085	113,959

(a) The company have also expended during the year 6,756 £. out of reserve fund for renewal of tramway lines.

(c) Estimate.

(b) Many of the items are estimates.

(d) Out of the net receipts, 2,215 £. was paid to the Greenock Board of Police, under lease of Greenock tramways.

Board of Trade,
1890.

Working Expenditure, and Net Receipts, &c., to 30th June 1890—continued.

WORKING EXPENDITURE.									NET RECEIPTS.	Number of Passengers Conveyed (including Season or Composition Ticket- holders).	Number of Miles Run by Cars.	Working Stock.				
Traffic Expenses.	Direction and Manage- ment.	Rent of Offices, Stables, and Sheds.	Rates, Taxes, and Tolls.	Compensation for Personal Injury.	Legal and Parlia- mentary.	Any other Working Expenses not included in the foregoing.	TOTAL.	Number of Horses.				Number of Locomo- tive Engines.	Number of Cars.			
£.	£.	£.	£.	£.	£.	£.	£.	£.								
1	3,558	465	78	243	-	-	-	282	11,701	4,675	3,092,310	339,352	176	-	-	19
2	4,094	466	-	344	208	19	1,627	12,501	3,468	Cars, 234,7130 Omnibuses, 480,911	Cars, 224,354 Omnibuses, 74,510	77	10		18	
3	2,170	1,039	-	135	-	-	-	3,604	3,193							1,990,228
4	13,914	2,060	877	2,620	356	465	2,271	68,948	34,522	14,829,782	1,501,253	992	-	-	76	
5	367	70	65	11	-	-	-	1,127	34	278,720	46,950	12	-	-	4	
6	32,829	3,159	-	6,844	1,585	400	13,241	176,005	65,181	47,709,791	4,333,957	2,687	-	-	233	
7	2,360	-	125	15	11	11	30	2,576	1,157	618,460	86,991	60	-	-	11	
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
9	903	38	90	46	-	-	-	32	2,234	677	545,365	77,100	33	-	-	6
10	653	167	50	156	4	-	-	72	2,050	1,255	422,985	75,438	29	-	-	14
11	295	109	-	131	2	-	-	153	2,156	568	(c)303,808	(c)47,144	24	-	-	7
12	1,433	712	298	519	41	130	74	10,591	(d)6,127	3,439,055	267,897	36	9		21	
13	62,576	8,285	1,583	11,064	2,207	1,025	17,782	296,493	120,857	76,008,545	7,235,435	4,126	19		423	
14	19,470	1,000	781	-	78	-	-	49,783	22,159	13,732,856	1,635,354	690	-	-	87	
15	813	104	48	85	-	-	-	90	1,983	60	269,737	66,083	29	-	-	6
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
17	427	200	-	57	-	-	-	78	1,388	608	30,579	17,728	-	-	2	(e) 5
18	220	50	16	50	132	-	-	25	2,165	167	210,141	35,625	-	-	3	4
19	525	415	88	50	5	50	358	4,179	582	133,575	83,153	-	-	6	22	
20	660	201	26	63	7	-	-	225	3,311	1,525	222,438	59,978	-	-	6	(g) 11
21	1,061	496	30	163	15	5	64	6,850	490	678,986	180,884	81	-	-	28	
22	22,210	2,968	782	4,454	625	1,201	5,104	99,818	23,364	16,293,109	2,398,682	1,090	-	-	151	
23	422	71	54	54	-	-	-	78	1,172	281	192,399	47,120	14	-	-	7
24	284	171	12	15	-	-	-	-	1,822	318	63,947	80	-	-	3	15
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
26	68	57	3	11	-	-	-	523	161	63,912	16,308	-	-	2	3	
27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
28	257	161	39	30	-	3	5	889	280	69,116	30,947	8	-	-	9	
29	46,417	5,894	1,879	5,022	860	1,259	6,027	173,863	49,995	31,960,847	4,571,942	1,912	22		348	
30	661,786	79,286	40,078	67,987	27,972	9,241	80,741	2,402,800	811,943	526,369,328	65,174,955	27,719	575		3,801	

(e) Also 20 goods, mineral, and cattle wagons and two brake vans.

(f) £. 240 of this amount charged to "renewal account"; 550 l. to revenue.

(g) Also 14 open goods wagons and one timber truck.

HENRY G. CALCRAFT.

TRAMWAYS (STREET AND ROAD).

RETURN of STREET and ROAD TRAMWAYS

Authorised by Parliament, showing the Amount of CAPITAL Authorised, Paid up, and Expended ; the Length of TRAMWAY Authorised, and the Length Open for the Public Conveyance of PASSENGERS, down to 30 June 1890 ; the GROSS RECEIPTS, WORKING EXPENDITURE, and NET RECEIPTS ; the Number of PASSENGERS Conveyed ; and the Number of MILES Run by CARS, during the Year ended 30 June 1890 ; together with the Number of HORSES, ENGINES, and CARS at that Date (in continuation of Parliamentary Paper, No. 238 of Session 1889).

(*Sir Michael Hicks Beach.*)

*Ordered, by The House of Commons, to be Printed,
4 July 1890.*

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